U. S. Bureau of Biological Survey

RECEIVED
OCT 9 1950
U. S. U. LIBRARY

WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
BY THE FISH AND WILDLIFE SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

24938

No. 60 Laurel, Maryland April 1950

The printing of this publication has been approved
by the Director of the Bureau of the Budget December 15, 1949.

CONTENTS

	Page
Wildlife (General)	
Behavior	2
Bibliography & Biography	2
Communities & Habitats	3
Control & Mortality	4
Education	4
Food	5
Harvests	5
Management	5
Populations	14
Research	15
Values	16
Mammals (General)	
Communities & Habitats	16
Diseases	16
Faunas & Manuals	17
Mammals	
Big Game	
General	18
Deer	18
Elk, Antelope, etc	22
Furbearers	
General	23
Beaver	24
Muskrat	25
Coyote & Foxes	25
Mink, etc	26
Rodents	
General	27
Mice, etc	29
Pocket gophers, etc	30
Rabbits	31
Insect-eaters	31
Marine	32
Birds (General)	
Behavior	32
Diseases	32
Faunas & Manuals	32
Populations	34
Birds	
Waterfowl	35
Fish-eaters	37
Cranes & Rails	38
Shorebirds	38
Upland Game	
General	38
Bobwhite & Western quail	40
Pheasant	41
Grouse, etc	43
Wild turkey	43
Doves	44
Hawks & Owls	44
Songbirds	45
Reptiles & Amphibians	46
Fishes	50
Invertebrates (General)	52
Mollusks	52
Insects	53
Arachnids	54
Vegetation (General),	
Communities & Habitats	54
Floras & Manuals	55
Vegetation	
Forest	56
Brushland	58
Grassland	59
Wildlife Plants	60
Aquatic	60
Lands & Soils	61
Water	62
Climate & Weather	62
Author index	63
Serials abstracted	67

Except as indicated, abstracts are by Neil Hotchkiss, editor

QL 1
U54
no. 60

WILDLIFE (GENERAL)--BEHAVIOR

BRELAND, OSMOND P. Animal facts and fallacies. 268 pages, illus. Harper & Brothers, New York. 1948. $3.00.

"There has long been a demand for a nontechnical book about animals which considers such questions as these: can toads live for years in solid rock; what is the largest animal that ever lived; can the horned toad squirt blood from its eyes; will sharks attack human beings; are lizards poisonous; .....?" "So far as I know there has previously been no one book that satisfactorily considers even the few questions listed above, and there are few people who know the correct answers. Yet, children and students are constantly asking questions of this kind." The approximately 250 headings dealing with mammals, birds, fish, amphibians, and reptiles answer many more than that number of questions, as is indicated by the 12-page index or by reading the text under almost any heading.

WILDLIFE (GENERAL)--BIBLIOGRAPHY & BIOGRAPHY

FLICK, FRANCES J. The Mississippi Delta; its economy and land use; a list of references. 154 pages. U. S. D. A. Library, Library List No. 40. January 1948.

This classified list contains more than 1000 references, published mostly since 1915. Emphasis is on forest resources and products; but in the literature on natural resources are about 100 items on ecology, flora, and fauna. The area covered extends from the Gulf of Mexico across Louisiana, Mississippi, and Arkansas.

ISFORT, LOUISE G. A partial bibliography of natural history in the Chicago region. The American Midland Naturalist 42(2): 406-472, illus. September 1949.

The author describes (with maps) the extent and natural regions of the area; then follows a bibliography of source material with separate bibliographies of different subjects. Each is introduced by a discussion of its status in the Chicago area and of the extent of work that has been done on it. The subjects are as follows: (1) geography, geology and fossils, (2) ecology, (3) botany, (4) invertebrates, exclusive of insects, (5) insects, (6) fishes, (7) amphibians and reptiles, (8) birds, (9) mammals, (10) man.

ODUM, EUGENE P., editor. A North Carolina naturalist, H. H. Brimley; selections from his writings. 205 pages, illus. The University of North Carolina Press, Chapel Hill. 1949. $3.50.

Six groups of selections are entitled: "Early Interests and Explorations", "Hunting and Fishing", "The Conservation Movement in North Carolina and Its Region", "The Giants of Nature", "The Lesser Forms of Life", "The North Carolina State Museum." Good reading.

MAIN LIBRARY K.M.

WILDLIFE (GENERAL)--BIBLIOGRAPHY & BIOGRAPHY--Continued

SMITH, MALCOLM, editor. The Zoological Record, volume the eighty-third; being the records of zoological literature relating chiefly to the year 1946. 1251 pages. Zoological Society of London. February 1949. $17.60.
The references in this volume are organized under 19 headings (mostly phyla or classes), each paged separately and available for prices ranging from 2 to 15 shillings. As in previous volumes, the material is thoroughly indexed.

WEHRLE, L. P. and PHILLIPS, ALLAN. Bibliography of Dr. Chas. T. Vorhies. The Journal of Wildlife Management 14 (1): 98-99. January 1950.
Papers on insects, birds, mammals, reptiles, etc.

WILDLIFE (GENERAL)--COMMUNITIES & HABITATS

BEACH, JAMES E. Inventory of the Rich Lake marsh, Huntington Forest, Newcomb, New York. Master's thesis, New York State College of Forestry, 1949 (copied from an anonymous abstract in Journal of Forestry for November 1949, page 889).
The author investigated the physical conditions of this 160-acre area in the central Adirondacks, made a cover type survey and a floristic survey, and studied the behavior and ecology of the mammals, birds, reptiles, and amphibians.

LANGLOIS, THOMAS HUXLEY and LANGLOIS, MARINA HOLMES. South Bass Island and islanders. 139 pages, illus. The Ohio State University, The Franz Theodore Stone Laboratory, Contribution No. 10. 1948.
A fascinating account of people and their environment on a small western Lake Erie island. The best soil has been exploited in the growing of grapes. Woodlots are browsed by cattle. Cottontails and pheasants are favored by some people, opposed by others. Lake Erie's fishes and the Island's wildlife depend for their existence, as elsewhere, on how little they interfere or are believed to interfere with man's usual pursuits.

LEOPOLD, ALDO. A sand county almanac, and sketches here and there. 226 pages, illus. Oxford University Press, New York. 1949. $3.50.
Observations and reflections on man's place in nature: (1) in central Wisconsin from January to December; (2) in prairie states and provinces, the Southwest, northern Mexico, the Great Basin; (3) around the world.

MAIN LIBRARY K.M.

WILDLIFE (GENERAL)--COMMUNITIES & HABITATS--Continued

YEAGER, LEE E. Effect of permanent flooding in a river-bottom timber area. Bulletin of the Illinois Natural History Survey 25 (Article 2): 29-65, illus. August 1949.

Between September 1939 and October 1946 the author made a study of the effects of a 3-foot rise of water in the Pere Marquette Wildlife Experimental Area, at the mouth of the Illinois River. His report discusses, particularly, tree mortality and post-flooding succession of plants, mammals, and birds. Permanent flooding killed nearly all trees, but there was much variation in susceptibility of different species (pin oak was all dead in 3 years, silver maple and elm in 6 years; a few white ash were still alive after 8 years). A 3-foot rise in the water table where mud was deposited resulted in similar but less severe mortality. By the end of the period cattail, duckpotato, sedges, smartweed, wild millet, and rice cutgrass were common invaders of the former forest. Muskrats adapted themselves best to the changed conditions; oppossums and cottontails were apparently pushed out. There were increases in wood ducks, herons, woodpeckers, and red-wings.

WILDLIFE (GENERAL)--CONTROL & MORTALITY

MARSTON, MERWIN A. Game and fire. Proceedings of the 1948 Northeastern Game Conference. Pages 30-32. 1948.

This paper deals with the Maine forest fires of October 1947: game losses, range conditions, hardwood regeneration, etc. The losses were not excessive.

SPENCER, DONALD A. Management methods and safeguards employed in reductional control of injurious wildlife. 9 pages. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 318. September 1949.

The author discusses management methods (elimination of rodent habitat, timely planting, regulated grazing), defensive methods (repellents, fences, transplanting wildlife, etc.), trapping, and poisoning.

WILDLIFE (GENERAL)--EDUCATION
(See also WILDLIFE (GENERAL)--RESEARCH, Kozicky)

BULGER, J. D. Conservation primer. The New York State Conservationist 4(2): 2-3 and 4(3): 7. October-November 1949 and December 1949-January 1950.

An outline for teaching the conservation of soil, water, forests, and wildlife.

SCHMEEKLE, F. J. and others. Guide to conservation education in Wisconsin schools. 96 pages, illus. Wisconsin Cooperative Educational Planning Program, Bulletin No. 20. August 1949.

The principal subjects outlined are conservation of soil, water, minerals, forests, and wildlife, and recreational and other values.

WILDLIFE (GENERAL)--EDUCATION--Continued

WHEELER, S. S. and others. Conservation and Nevada, a textbook for use in Nevada schools. 131 pages, illus. Nevada State Department of Public Instruction, Carson City. 1949.

There are chapters on Nevada's location in the Great Basin and its geologic history; on conserving its soil, water, forests, livestock ranges, and fish and wildlife; on sportsmanship; and on conservation in general.

WILDLIFE (GENERAL)--FOOD

COLLINS, STEPHEN. Hunters and hunted. Cornell Rural School Leaflet 43(3): 1-32, illus. Winter 1949-50.

A discussion, well illustrated with drawings, of the complex food relations among animals and of the direct dependence of some animals upon plants.

MARTIN, ALEXANDER C. Procedures in wildlife food studies. 10 pages, illus. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 325. December 1949.

"This supersedes Leaflet 193, Directions for Collecting Materials for Food Habits Studies and Leaflet 222, Laboratory Procedures in Wildlife Food Studies."

VAN CAMP, JOHN C., JR. The nutrient element content of the foliage of certain species of minor forest vegetation. Journal of Forestry 46(11): 823-826. November 1948.

The foliage of 2 ferns, 5 other herbs, and 5 shrubs of eastern United States was found to contain more potassium than did the foliage of hardwood and coniferous forest trees. Most of them contained more phosphorus and nitrogen, as well. In contrast, most of them had less calcium than the tree foliage.

WILDLIFE (GENERAL)--HARVESTS

FORAN, ARTHUR F. Public and private shooting grounds. Proceedings of the 1948 Northeastern Game Conference. Pages 136-138. 1948.

How they operate in New Jersey.

WILDLIFE (GENERAL)--MANAGEMENT
(See also WILDLIFE (GENERAL)--RESEARCH, Cowan; Kozicky)

ANONYMOUS. Eighty-third annual report [Massachusetts] Division of Fisheries and Game [July 1, 1947 to June 30, 1948]. 26 pages. Boston, Mass. 1948.

Reports on personnel, finances, land purchase, pond and lake biological survey, game cover improvement, law enforcement, game and fur animal harvest, propagation and distribution of fish and game.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

ANONYMOUS. Federal aid in wildlife restoration: annual report of the Pittman-Robertson program for the fiscal year ending June 30, 1949. 48 pages, illus. Wildlife Management Institute, Washington 5, D. C. 1949.
"All of the States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands continued to be active program participants during the year." 612 approved projects called for an investment of nearly 10 million dollars. About half of that was for improvement and restoration of habitat for farm game, waterfowl, and forest game. Expenditures for surveys and investigations dropped sharply; but all but 2 states had projects of this nature. Coordination projects increased. A 27-page table describes the projects by states and territories.

ANONYMOUS. The Pennsylvania Game Commission--streamlined for better service. Pennsylvania Game News 20(6): 14-18, illus. September 1949.
An account of its organization and activities, with pictures of 30 officials.

BARRY, EDWIN M. Let's get it on the land. Proceedings of the 1948 Northeastern Game Conference. Pages 108-114, illus. 1948.
An account of how the farm-game program is being carried out in Maryland.

BEAULIEU, P. O. [State of South Dakota] Thirty-ninth annual report of the Department of Game, Fish and Parks, July 1, 1947 to June 30, 1948. 54 pages. 1948?
Remarks on game conditions and game management; and a tabular report on finances, licenses issued, arrests, seizures, and fish planting.

BROWN, R. A., JR. and others. Annual reports of the Missouri Conservation Commission, fiscal years July 1, 1946 to June 30, 1947, July 1, 1947 to June 30, 1948. 179 pages, illus. Jefferson City. 1948?
The report of the Fish and Game Division, pages 11-117, comprises separate sections for each of the two years on game management, fisheries management, development, and research.

BUNTIN, HOWELL and others. Biennial report of Department of Conservation, State of Tennessee, for period ending June 30, 1948. 71 pages, illus. 1948?
A brief report of the Division of Game and Fish describes its organization and operation, management of fish resources, and management of game resources. The last includes propagating deer, turkey and quail, operating game refuges and game management areas, and developing areas for waterfowl.

CARPENTER, RALPH G., 2nd. [State of New Hampshire] Biennial report of the Department of Fish and Game, July 1, 1946 to June 30, 1948. 92 pages, illus. 1948.
Among the items described in this report are fish hatcheries and rearing stations, stream improvement program, pond reclamation studies, pond surveys, fertilizing lakes, mapping pheasant and snowshoe hare covers, state-wide wildlife survey, beaver survey, grouse census, deer yard survey, and education.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

CHAPMAN, ISAAC D. Second biennial report, Department of Wild Life and Fisheries, State of Louisiana, 1946-1947. 352 pages, illus. New Orleans. 1948.

The report of the Fish and Game Division includes 58 pages on water hyacinth control, summaries of fish and quail distribution, and 90 pages on Pittman-Robertson projects. There is also a detailed report by the chief biologist, one on the work of the Fur and Refuge Division, and reports on other activities of the Department.

CLAY, JOHN W. and others. Twenty-eighth biennial report of the State Fish and Game Commission of the State of Utah. 80 pages, illus. July 1, 1946 to June 30, 1948.

This report describes permanent improvements (hatcheries, marshland development, etc.), wildlife research unit activities, public relations, big game research, beaver cropping, game management (big game, upland game), and fisheries management.

CONNOR, W. S. and others. Report of activities of Arizona Game and Fish Commission, January 1, 1943-June 30, 1947. 47 pages, illus. 1948.

Reports on fisheries, predatory animal control, fur conservation, game bird farm, Federal aid activities, research, game management, law enforcement, information, game depredation control, etc.

CRAWFORD, BILL. Relationships of soils and wildlife. Pages 10-18, illus. in Wildlife and the soil. New edition. Missouri Conservation Commission, Circular No. 134. August 1949.

Figures on a large number of Missouri raccoons, muskrats, opossums, and cottontails show that the largest animals came from the most fertile soils. The largest populations were on soils of medium fertility, because of the intensive cultivation of the most fertile soils. Fox squirrels and deer were similarly affected by soil fertility.

CRISSEY, WALTER F. and DARROW, ROBERT W. A study of predator control on Valcour Island. 28 pages, illus. New York State Conservation Department, Research Series, Division of Fish and Game, No. 1. 1949. Free.

Predators were controlled on thousand-acre Valcour Island in northern Lake Champlain from 1941 to 1945. A similar-sized tract on the adjacent mainland was used as a check. The report describes the study areas and the history of their wildlife populations; gives details of predator control and of concurrent changes in the abundance of ruffed grouse, varying hares, and small mammals; and estimates the results of predator control on these animals. In 4 years, predator control apparently permitted game on Valcour Island to increase from a low to a moderately high level; but it did not prevent a severe decline toward the end of the period.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

DAVIDSON, JOE B. Habitat improvement on the farm. Proceedings of the 1948 Northeastern Game Conference. Pages 115-116. 1948.
What is needed and what is being done in Illinois.

DeBUSK, KELLY E. Biennial report Oklahoma Game and Fish Department, State of Oklahoma, for the biennium July 1, 1946 to June 30, 1948. 79 pages, illus.
This report describes the personnel, organization, and finances of the Department; its lands; the activities of the divisions of game and fisheries; cooperative fisheries and wildlife research; enforcement; and public relations. The game division report deals with deer, furbearers, quail, migratory game birds, crow control, predatory animal control, and the Federal aid program.

DeGARMO, W. R. A program of forest wildlife management. Proceedings of the 1948 Northeastern Game Conference. Pages 44-48. 1948.
The author reviews West Virginia's cooperative management work on the Monongahela National Forest, the recently completed Pittman-Robertson beaver and turkey management projects, and other activities.

DODGEN, H. D. Annual report of the Game, Fish and Oyster Commission, State of Texas, for the fiscal year 1947-48. 32 pages. 1948?
Wildlife restoration, cooperative research, wildlife conservation education, game preserves, pollution, fish management, law enforcement, and coastal fisheries are some of the subjects discussed.

DORER, RICHARD J. Partners! Farmers and sportsmen. The Conservation Volunteer 12(72): 1-7, illus; 12(73): 3-9, illus; and 13(74): 4-9, illus. September-October 1949, November-December 1949, and January-February 1950.
The story of habitat improvement in Minnesota since 1938: the planting of upland game cover in shelterbelts, windbreaks, hedges, and fence corners.

FABER, LESTER F. Pittman-Robertson to date in Iowa. Iowa Conservationist 8(11): 177,184, illus. November 1949.
Iowa has had 10 years of Pittman-Robertson work. It includes the acquisition of 20 areas (shown on a map of the State) and the development of their wildlife habitat.

GABRIELSON, IRA N. Game management and the practical application thereof. Proceedings of the 1948 Northeastern Game Conference. Pages 121-124. 1948.
The author discusses (1) protection, (2) artificial propagation and stocking, (3) refuges, and (4) habitat improvement.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

GRAHAM, EDWARD H. Management of farm woodlands for timber production, wildlife, and soil conservation. Proceedings, Society of American Foresters' Meeting, December 16-18, 1948. Pages 132-138. 1949.

Important practices in woodland-wildlife management are protection from fire, protection from grazing, selection cutting, establishment of shrub borders, preservation of den trees, planting bicolor lespedeza strips in open pine, and use of fire lanes.

GUSTAFSON, A. F. and others. Conservation in the United States. Third edition. 534 pages, illus. Comstock Publishing Co., Ithaca, N. Y. 1949. $5.00.

Of a total of 18 chapters, one is on fish, one on game and fur, and one on other useful wildlife. The chapter on game and fur considers economic and esthetic values, past abundance, reasons for decline of many kinds, present status, means of conservation, fur farming, game management through the provision of cover and food, game propagation, the relation of farmers to game, and organizations concerned with protection. The chapter on other useful wildlife discusses interrelationships, values, destruction, and conservation.

GUTERMUTH, C. R. Forest-wildlife ideologies. Journal of Forestry 47(11): 886-889. November 1949.

The biggest problem of wildlife management on forested lands is to sell the public on its value. If the public really knew the values involved, appropriations to do a real wildlife management job in National Forests would be forthcoming.--W. W. Hosley.

HAYES, EDWARD C., JR. [State of Rhode Island and Providence Plantations] Department of Agriculture and Conservation, Division of Fish and Game, 1947. 18 pages. 1948?

A summary of game conditions, game management, freshwater fisheries, and commercial fisheries, with tables.

HILL, R. G. and BRADT, G. W. Producing wildlife by good farm land use. 22 pages, illus. Michigan State College Extension Service, Extension Bulletin 218. June 1948.

The authors discuss the woodlot, marshes and ponds, unused areas, strip cropping and cover crops, windbreaks, providing wildlife food, control of hunting, and education.

HOFFMASTER, P. J. State of Michigan, The Department of Conservation, Fourteenth biennial report, 1947-1948. 238 pages, illus. 1949.

On pages 149-172 is the report of the Game Division. It describes Southern Game Areas, the Pittman-Robertson program, habitat management, status of game species, predators, fur crop, cooperative hunting clubs, and cooperative extension work.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

JORGENSEN, CARL. Report of the Wyoming Game and Fish Commission.....for the biennium 1947-1948. 96 pages, illus. 1949?
This report summarizes the Commission's policy and progress; and describes its personnel, public relations, big game conditions, game and fish management units, upland game bird conditions, predator control, fur-bearing animals, fish management and propagation, Federal aid program, and finances.

LANGENBACH, JOHN R. Forestry--wildlife development. Proceedings, Society of American Foresters' Meeting, December 16-18, 1948. Pages 126-132. 1949.
The Pennsylvania Game Commission is trying "to improve the wildlife habitat by creating better food and cover conditions through the harvesting of timber products on a sustained-yield basis without incurring a financial deficit" on the 23,000-acre State Game Lands No. 25, in Elk County. The work of the project includes (1) the making of cover and soil conservation surveys, (2) inventories of timber stands and browse conditions, (3) planning for sustained yield of wood products, (4) planning for sustained yield of wildlife habitat, and (5) the organization of administrative studies.--M. A. Slattery.

LARRABEE, LEE and others. Twelfth biennial report of the [Kansas] Forestry, Fish and Game Commission, June 30, 1948. 44 pages, illus. Topeka, Kansas. 1948.
This report contains financial tables, and information on 20 state parks, Pittman-Robertson projects, water development on the Cheyenne Bottoms, water management, fish and game management, damage by deer and beaver, coyote control, law enforcement, and other subjects.

LEFFLER, ROSS L. and others. Biennial report 1947-1948. 88 pages, illus. Pennsylvania Game Commission, Harrisburg, Pa. 1948.
This report summarizes legislation, general administration, predator control, land operations, acquisition of game management areas, engineering, general field operations, game farm operations, research, training school, and public relations.

LENNOX, COLIN G. Report of the Board of Commissioners of Agriculture and Forestry of the Territory of Hawaii, biennial period ending June 30, 1948. 101 pages, illus. 1949?
The report of the Division of Fish and Game on pages 75-85 includes information on fishery research, fresh water fish introductions, upland game birds, fisheries statistics, warden service, sale of hunting and fishing licenses, and the commercial fish catch. The report of the Division of Forestry on pages 86-95 includes an account of protection work and a table showing the numbers of wild pigs, goats, sheep and cattle destroyed (a total of more than 17,000 in 1946-48).

WILDLIFE (GENERAL)--MANAGEMENT--Continued

MORGAN, BEN C. and others. Biennial report Florida Game & Fresh Water Fish Commission, biennium ending December 31, 1948. 87 pages, illus. 1949.

In addition to a general report there are separate reports from the following divisions: gama management, fish management, law enforcement, information and education, and accounting. The game management report discusses the status in Florida of quail, deer, turkey, waterfowl, mourning dove, and squirrels, and describes Federal aid projects that involve these animals.

MORGAN, H. R. North Dakota State Game and Fish Department, annual report July 1, 1948 to June 30, 1949. 67 pages, illus. 1949.

This report includes information on administration, finances, game farms, refuges, nuisance beaver removal, crow control, fisheries, public relations, status of furbearers, enforcement, impoundment program, and Federal aid activities. There is a list of supplementary reports written by Federal aid personnel for the period 1939 to 1949.

MURRAY, T. B. Twenty-second biennial report Fish and Game Department of the State of Idaho, July 1, 1946 to June 30, 1948. 61 pages. 1949?

Following an account of policy, administration, and personnel, this report discusses big game (deer, elk, black bear, mountain goat, bighorn, antelope, and salting and winter feeding), the work of the fisheries division, game birds (pheasant, Hungarian and chukar partridges, quail, grouse, waterfowl), furbearers (beaver, etc.), predator control, Federal aid projects, education, construction and maintenance, and finances.

PEBBLES, HAROLD A. and others. 8th biennial report--of the Washington State Game Commission [1946 to 1948]. 107 pages, illus. 1948.

This report summarizes work in fisheries, game and fur management, predator control, law enforcement, land management, engineering, and education.

QUINN, I. T. Annual report of the [Virginia] Commission of Game and Inland Fisheries for the fiscal year ending June 30, 1948. 45 pages. Richmond, Va. 1949.

All information is in tables. They include details of income and expenditures, licenses and permits, game warden activities, fish distribution, game distribution, and seed and plant distribution.

QUINN, I. T. The new Virginia wildlife program of the Commission of Game and Inland Fisheries. 14 pages, illus. Richmond, Va. 1948.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

RIDER, H. A. Report of The Division of Conservation and Natural Resources, Department of Agriculture [Ohio].....1948. 63 pages, illus. 1949.
Reports of the different Sections include those of Game Management and Propagation (habitat improvement, game farm operations, research) and Wildlife Conservation Extension Service.

SLAYBAUGH, NELSON E. Wildlife conservation costs in Pennsylvania. Pennsylvania Game News 20(6): 19-22, illus. September 1949.

SMITH, CHARLES F. and others. Twenty-first biennial report of the State Conservation Commission of Wisconsin, for the fiscal years ending June 30, 1947 and June 30, 1948. 128 pages, illus. 1949.
This report gives information on administration, forests and parks, cooperative forestry, forest protection, game management, fish management, law enforcement, information and education, and finance. Game management activities included general administration, regulation of seasons on game and furbearers, operation of public hunting and fishing grounds, cooperative game management, the Federal aid in wildlife restoration program (research in the management of deer, foxes, fur, grouse, pheasants, and waterfowl; quail census; Horicon marsh acquisition and development), and winter deer feeding.

SMITH, NORMAN F. Controlled burning in Michigan's forest and game management programs. Proceedings, Society of American Foresters' Meeting, December 17-20, 1947. Pages 200-205. 1948.
In northern Michigan, recreation is an important use of the public forests, and this is being made a definite part of the forest management program. Controlled burning is a tool to be used cautiously in managing forest areas for game production.

STANTON, FRANK. Progress report on habitat improvement. Oregon State Game Commission Bulletin 5(1): 1,3-6,8, illus. January 1950.
The author gives details of what has been done in Oregon for upland game, waterfowl, big game, and furbearers.

STILES, BRUCE F. Report of the State Conservation Commission [Iowa] for the biennium ending June 30, 1948. 249 pages, illus. 1949.
On pages 157-249 is the report of the Division of Fish and Game. It describes farmer-sportsman cooperation, game management areas, status of game birds and mammals, wild life refuges, game bird and mammal stocking, fish stocking, inland fish rescue, obnoxious fish removal, and other activities.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

SWIFT, ERNEST. Wildlife as a forest crop in the Lake States. Proceedings, Society of American Foresters' Meeting, December 17-20, 1947. Pages 483-492. 1948.

The author discusses deer, beaver, and sharptail and pinnated grouse. He believes that there needs to be ".....long-range, cooperative planning for compatible wildlife and timber production on public lands."

SWIFT, LLOYD W. Wildlife management in the multiple use management of the national forests. Proceedings, Society of American Foresters' Meeting, December 16-18, 1948. Pages 121-125. 1949.

Up until the present time the Forest Service has had a restoration problem and a custodial responsibility which have absorbed most of its manpower and facilities. Now the trend is toward multiple use of the forests--that is, integrating a productive wildlife habitat and its needs with timber management, grazing, recreation, and watershed management.--M. A. Slattery.

THOMAS, BERT E. Department of Conservation, State of Alabama. Report for fiscal year October 1, 1947-September 30, 1948. 111 pages, illus. 1948?

On pages 80-94 is the report of the Division of Game, Fish and Seafoods. It includes information on the status of fish and wildlife in Alabama, Pittman-Robertson projects, fish hatcheries, law enforcement, and the fishing lake program.

VALGENTI, FRANK J., JR. Annual report New Jersey Department of Conservation and Economic Development, Division of Fish and Game, for the fiscal year commencing July 1, 1948 and ending June 30, 1949. 47 pages. 1949.

A report on fish and game liberation, law enforcement, game and fur take, predator control, game management, and conservation education and public relations.

VAUGHN, ERNEST A. and others. Thirty-second annual report of the director and eleventh annual report of the [Maryland] Game and Inland Fish Commission, 1949. 61 pages, illus. 512 Munsey Bldg., Baltimore 2. 1950?

This report summarizes administration, game and inland fish management, law enforcement, and public relations. The section on game and inland fish management describes conditions for different kinds of game throughout the State, Federal aid projects, game propagation and distribution, and inland fish management.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

WALLACE, DAVID H. Maryland Board of Natural Resources, Sixth annual report, 1949. 194 pages, illus. 1949.

Part II comprises individual reports from all departments except that of Game and Inland Fish, Part III, "Highlights of the Year", summarizes 1949 legislation relating to oysters, commercial fish, crabs, waterfowl, game and fur-bearing animals, and fresh water fish; and outlines major research projects on raccoon food habits, muskrat populations, fish in the Magothy River, etc.

WALLACE, LISLE L. and others. The Indiana Department of Conservation, July 1, 1946, to June 30, 1947. Pages 644-719 in Year Book, for the fiscal year ended June 30, 1947. 1947?

A report from the Division of Fish and Game on pages 674-695 includes information on game preserves, game farms, Federal aid projects, fish hatcheries, lake and stream surveys, and beaver control.

WILSON, E. E. and others. Biennial report of the Game Commission of the State of Oregon to the Governor and the Forty-fifth Legislative Assembly, 1947-1948. 43 pages, illus. 1948?

This includes reports from the departments of (1) fisheries, (2) fishways, screens and stream and lake improvement, (3) game, (4) engineering, (5) finance and accounting, (6) secretary, (7) supplies, and (8) public relations. The Department of Game report includes accounts of research, big game, game damage control, waterfowl, beaver and other furbearers, predator control, upland game, and habitat improvement.

WILDLIFE (GENERAL)--POPULATIONS

BARKALOW, FREDERICK S., JR. A game inventory of Alabama. 140 pages, illus. Alabama Department of Conservation. 1949.

Procedures, population estimates, and population trends are discussed in detail for bobwhite, wild turkey, white-tailed deer, waterfowl, beaver, rabbit, and squirrels for the years 1939 to 1942. Trends are shown for other game species.

MITCHELL, GLENN E. Wildlife-forest relationships in the Pacific northwest region. Journal of Forestry 48(1): 26-30. January 1950.

After outlining forest conditions and browse conditions for deer and elk on the east and west sides of the Cascades, the author describes the behavior and need of control of deer, elk, black bear, porcupine, squirrels, beaver, mountain beaver, rabbits, and meadow mice. "If good practical management is applied to wildlife the forests will not suffer, and if the same kind of management is applied to the forests, wildlife will have a good habitat for a long time to come."

WILDLIFE (GENERAL)--POPULATIONS--Continued

PALMER, RALPH S. Fluctuating game populations and the sportsman. Proceedings of the 1948 Northeastern Game Conference. Pages 117-120.
The author reviews several cases that apply to New England: caribou, snowshoe hare, cottontail, ruffed grouse. bob-white, waterfowl. Some of our bag limits are too high. The public needs to know more about the nature of game fluctuations.

WILDLIFE (GENERAL)--RESEARCH

COWAN, IAN McTAGGART. Wildlife conservation in Canada. The Forestry Chronicle 25(4): 315-318. December 1949.
A discussion of wildlife management, with emphasis on research. There is need for much more research. The author advises those preparing for it to specialize in zoology, forestry, or ecological botany.

HUNTER, GILBERT N. The personal interview method of obtaining information on game and fish resources. Colorado Game and Fish Department, Current Report 24. 56 pages, illus. August 1949.
Nearly 5000 field interviews resulted in information on many topics relating to big game, small game, fish, and fur animals.

KING, RALPH T. and WEBB, WILLIAM L. Research in its relation to the further coordination and integration of forest management and wildlife management. Proceedings, Society of American Foresters' Meeting, December 16-18, 1948. Pages 140-148. 1949.
The authors consider research in respect to its nature (biological, management, economic, and social aspects), the results to be expected, and the means for assuring it.

KOZICKY, EDWARD L. Wildlife's 15 years at college. Iowa Conservationist 8(11): 177,182, illus. November 1949.
The present Cooperative Wildlife Research program includes projects on pheasant, bobwhite, blue-winged teal, muskrat, cottontail, parasites and diseases of wildlife, and plant ecology in waterfowl breeding areas. During the 15 years, Iowa State College has granted 89 degrees in wildlife management.

WEBB, WILLIAM L. A method for filing field observations. The Journal of Wildlife Management 14(1): 83. January 1950.
Simple records of animal distribution or routine observations on special projects are transferred directly to tables or maps. Other observations are copied on observation record forms and filed by subject.

WILDLIFE (GENERAL)--VALUES

BELLROSE, FRANK C. and ROLLINGS, CLAIR T. Wildlife and fishery values of bottomland lakes in Illinois. 24 pages, illus. Illinois Natural History Survey, Biological Notes No. 21. June 1949.

"Extensive areas of the Illinois and Mississippi river bottomlands have been drained and leveed, destroying fish and aquatic wildlife habitat and increasing flood heights." Restoration of bottomland would eliminate an uncertain agricultural economy, would reduce flood heights, and would furnish significant revenue from angling, commercial fishing, duck hunting, and muskrat trapping. The authors give figures on these values that are based on the harvests at Spring Lake, near Savanna, and Lake Chautauqua, near Havana.

ROBINSON, J. L. Resources of the Arctic. The Beaver, Outfit 280, December 1949. Pages 48-51.

A good general picture of the million-acre, treeless region that stretches across northern Canada. There is only a narrow strip along the Arctic Ocean in the west; but the zone extends south to central Hudson Bay in the east. The region has neither forestry nor agriculture; and its only exported resource is fur (mostly arctic fox). "Wildlife resources are about in balance with the native population." "It is doubtful if this large area will play an important part in the total Canadian economy for many years to come."

MAMMALS (GENERAL)--COMMUNITIES & HABITATS

BLAIR, W. FRANK and MILLER, CLAY E., JR. The mammals of the Sierra Vieja region, southwestern Texas, with remarks on the biogeographic position of the region. The Texas Journal of Science 1(1): 67-92. March 1949.

The authors studied the ecological distribution of 46 species of mammals in 1947 and 1948. They found them occupying 7 associations in the Plains Life Belt, 6 associations in the Roughland Life Belt (both of these life belts are in the Sierra Vieja Biotic District), and 4 associations in the Rio Grande Basin Biotic District.

MAMMALS (GENERAL)--DISEASES

HOPKINS, G. H. E. The host-association of the lice of mammals. Proceedings of the Zoological Society of London 119 (part 2): 387-604. August 1949.

This article contains an account of the biology of lice, a host-list covering 100 pages and a discussion of this list, and an account of the antiquity of lice as parasites of vertebrates. There is a list of approximately 600 references and a long list of names used in the host-list.

MAMMALS (GENERAL)--DISEASES--Continued

MORLAN, HARVEY B.; HILL, ELMER L.; and SCHUBERT, JOSEPH H. Serological survey for murine typhus infection in southwest Georgia animals. Public Health Reports 65(2): 57-63. January 13, 1950.

"In a limited survey of southwest Georgia animals, exclusive of domestic rats, 3,202 sera from 37 species were examined by the complement fixation test for murine typhus. A low level of natural infection was indicated by the finding of 47 positive sera from 12 species of animals including the opossum, cottontail, fox squirrel, house mouse, rice rat, cotton mouse, old-field mouse, cotton rat, dog, Florida skunk, weasel, and blue jay."

MAMMALS (GENERAL)--FAUNAS & MANUALS
(See also MAMMALS (GENERAL)--COMMUNITIES & HABITATS, Blair & Miller)

PENNEY, J. T. Distribution and bibliography of the mammals of South Carolina. Journal of Mammalogy 31(1): 81-89. February 1950.

A list of 56 species gives distribution by counties. These records are based on a bibliography of 70 titles.

POTTS, MERLIN K. and GRATER, RUSSELL K. Mammals of Mount Rainier National Park. 86 pages, illus. The Mount Rainier Natural History Association, Longmire, Wash. 1949.

The authors discuss wildlife trends, wildlife problems, life zones, and the habits and distribution of the Park's more than 50 species of mammals.

RICHMOND, NEIL D. and ROSLAND, HARRY R. Mammal survey of northwestern Pennsylvania. 67 pages, illus. Pennsylvania Game Commission and U. S. Fish and Wildlife Service. 1949.

This survey was made in 1946-1948. The report contains information on the distribution, habitat, and food of 44 species. The authors recommend better use of swales and marshy stream margins, the liming of right-of-ways in the forested area of the high plateau section, and a study of fox economics.

MAMMALS--BIG GAME (GENERAL)

COWAN, I. McT., and BRINK, V. C. Natural game licks in the Rocky Mountain national parks in Canada. Journal of Mammalogy 30(4): 379-387, November 1949.

Studies of licks were made during 5 years in Jasper, Banff, Kootenay, and Yoho National Parks in Alberta and British Columbia. "The results are inconclusive and, taken in conjunction with similar studies of smaller scope made elsewhere in North America, lead to the conclusions (1) that sodium chloride is not necessarily the essential element; (2) that phosphorus is not the essential element in these licks; (3) that trace elements may well be the critical constituents in these natural licks; and (4) that to arrive at conclusive results methods such as preference tests will probably be more productive than chemical analyses of the lick soils."--M. A. Slattery.

MAMMALS--BIG GAME (DEER)

ADAMS, LOWELL. The effects of deer on conifer reproduction in northwestern Montana. Journal of Forestry 47(11): 909-913, illus. November 1949.

The winter white-tailed deer range studied lies in a zone of tension between ponderosa pine and Douglas-fir. The deer showed a marked preference for the pine. To provide sufficient reproduction of pine it is suggested that it be favored silviculturally, that deer numbers be adjusted to allow recovery of broadleaf food plants, and that the effects of wide-scale timber cutting be studied.--N. W. Hosley.

ANDERSON, ALFRED W. Early summer foods and movements of the mule deer (Odocoileus hemionus) in the Sierra Vieja Range of southwestern Texas. The Texas Journal of Science 1(4): 45-50. December 1949.

In June and July 1948, 13 species of plants were seen being used during 1287 feeding minutes. Emory's oak was the most important item. 87% of all food was browse. Deer were inactive during the hot hours of the day. They were gregarious while feeding and moving. None was seen taking free water.

ANDERSON, CHESTER C. White-tailed deer in Wyoming. Wyoming Wild Life 13(4): 20-22, illus. May 1949.

The author gives information on distribution and behavior. The Black Hills region is the only place in the State where white-tails continue to thrive.

MAMMALS--BIG GAME (DEER)--Continued

BARTLETT, ILO H. Cedar swamp management and deer. Proceedings, Society of American Foresters' Meeting, December 17-20, 1947. Pages 210-214. 1948.

".....when Michigan became deeryard conscious about 1925, white cedar .....was the most desired, most nutritious, and most abundant winter deer food present in deeryards both large and small." Since then, managed cutting of state-owned deeryards has not proven a cure-all; and "..... unless surplus deer are shot off in the fall both starvation of deer and the elimination of cedar reproduction will continue."

BAUMGARTNER, LUTHER L. and POWELL, STEPHEN E. Zinc dimethyldithiocarbamate-cyclohexylamine complex as a deer repellent applicable to agricultural crops. Contributions from Boyce Thompson Institute 15(7): 411-420, illus. April-June 1949.

Repeated applications of z. a. c. kept white-tailed deer in Maine from destroying snap beans, strawberries, buckwheat, and apples.

BRAMBLE, W. C. and ENGLISH, P. F. The forest grazing problem created by deer in eastern forests. Proceedings, Society of American Foresters' Meeting, December 16-18, 1948. Pages 257-263. 1949.

"Deer browsing has created a serious range problem for forest managers in many parts of the northeastern United States." Two points of view must be considered: "(a) that of the forester who is primarily concerned with injurious effects of deer on natural tree reproduction and plantations, and (b) that of the wildlife manager who is faced with a need for maintaining adequate food for deer while at the same time preventing them from ruining the habitats of other game species." The authors discuss conditions in Pennsylvania, where "In the past twenty years, growth of the forest from low bushy stages to pole size and an enormous increase in the deer herd have made some measures necessary to keep the deer population at a good hunting level." Research on feeding habits and seasonal forage requirements and management of the range are being used in the solution of the problem.--M. A. Slattery.

DASMANN, WILLIAM P. Deer-livestock forage studies on the Interstate winter deer range in California. Journal of Range Management 2(4): 206-212, illus. October 1949.

This herd of mule deer winters on the Modoc National Forest. Forage is allotted to deer and livestock on a fifty-fifty basis. 200 forage utilization check plots were established in October 1947. The data from these plots are accepted as a true index of forage use. Livestock and deer compete most for bitterbrush and bluegrass. There is some over-browsing of bitterbrush.

MAMMALS--BIG GAME (DEER)--Continued

ENGLE, JAMES W., JR. The whitetail makes a comeback! Virginia Wildlife 10(12): 18-20, illus. December 1949.
Deer are widespread in Virginia, except in parts of the Piedmont. Some localities in the Coastal Plain have more than they can support. Hunting is the cheapest and best way to reduce these populations.

ETHEREDGE, O. F. Experimental trapping and transplanting of mule deer. 10 pages, illus. Texas Game, Fish & Oyster Commission, FA Report Series No. 5. August 1949.
This work was done in Pecos County on a drouth-stricken range with a surplus of deer. Trapping was successful with a modified Pisgah box trap (36 deer were taken in 84 trap nights). The author gives details of trapping and transplanting.

GLAZENER, W. C. Operation deer trap. Texas Game and Fish 7(10): 6-7, 17,26, illus. September 1949.
Since 1939 Texas has engaged in large scale deer trapping and transplanting. Use of a single-compartment trap of airplane aluminum alloy has done away with most of the trapping difficulties of the early years.

HAMERSTROM, F. N., JR. and CAMBURN, F. LAWRENCE. Weight relationships in the George Reserve deer herd. Journal of Mammalogy 31(1): 5-17, illus. February 1950.
The authors present data from 131 deer taken between 1941 and 1948 on this southeastern Michigan area. A formula for predicting whole weight from hog-dressed weight works with groups of deer but not always with single animals.

HERMAN, CARLTON M. and BISCHOFF, ARTHUR I. Papilloma, skin tumors in deer. California Fish and Game 36(1): 19-20, illus. January 1950.

INTERSTATE DEER HERD COMMITTEE. Fourth progress report on the cooperative study of the interstate deer herd and its range. California Fish and Game 36(1): 27-52, illus. January 1950.
The strip census in 1948-49 showed a 140% increase over the previous year. This is explained by (1) heavy snowfall that pushed in all the deer from contributory ranges in California and Oregon and (2) a heavy fawn survival. The state line track count showed a 45% increase, the pellet group count a 37% increase. There was a 33% increase in the average cropping of bitterbrush by deer and a 58% increase in the cropping of juniper by deer. Livestock cropping of bitterbrush decreased 8%. The Committee recommends that the California Fish and Game Commission set a season for antlerless deer in the fall of 1950.

MAMMALS--BIG GAME (DEER)--Continued

McLAUGHLIN, C. L. The effect of the Quabbin Reservation on deer populations in the adjacent towns. Proceedings of the 1948 Northeastern Game Conference. Pages 38-40. 1948.

This 130-square-mile reservation in central Massachusetts has increased the deer populations of the 9 adjacent towns. If these populations are to be maintained the reservation must be kept productive.

SEAMANS, ROGER. Deer management. Proceedings of the 1948 Northeastern Game Conference. Pages 41-43. 1948.

"If and when Vermont is permitted to harvest an additional crop, by means of a controlled antlerless deer season, the deer herd can be managed. Until that time arrives, the collection of supporting data will continue, the public will be brought face to face with the problem at every possible opportunity and the herd will continue to grow."

SEVERINGHAUS, C. W. Development of a method for determining the age of white-tailed deer. Proceedings of the 1948 Northeastern Game Conference. Pages 33-37. 1948.

See Wildlife Review No. 57, page 9 for the abstract of a more detailed article on determining the age of deer by tooth development.

STENLUND, MILTON H. Minnesota deer facts. The Conservation Volunteer 12(72): 28-32, illus. September-October 1949.

During Minnesota's early history deer ranged over nearly all of the state. Now that the southern part has been cleared for farming the deer have had to move north. The herd is now much too large in proportion to the amount of browse present. The only way to remedy this situation is by hunting and utilizing the surplus animals.--M. A. Slattery.

WAMPOLE, JOHN H. and FICHTER, EDSON. Management of native deer in Nebraska. Part I and Part II. Wildlife Management Notes 1(4,5): 15-22, illus. March 1949.

The authors discuss the present population and its increase, carrying capacity, hunting, and food.

WOOD, ROY. Economic importance of the Arkansas deer herd. Proceedings of the Arkansas Academy of Science 2: 65-68. 1947.

The author reviews the history, present population, economic importance, and future of white-tailed deer in Arkansas. "The foundation of a great deer herd has been laid. Public cooperation is needed in the protection of the deer we now have. At the present rate of increase we may expect to achieve our objective of 320,000 deer by 1960."

MAMMALS--BIG GAME (ELK, ANTELOPE, ETC.)

BROCKLEY, HARRY J. Antelope in the snow. Wyoming Wild Life 13(4): 27-30, illus. May 1949.
Behavior in Albany County during the January 1949 blizzard.

FERREL, CAROL M. and LEACH, HOWARD R. Food habits of the prong-horn antelope of California. California Fish and Game 36(1): 21-26. January 1950.
The material in 56 stomachs taken in Lassen and Modoc Counties, California in May-June 1942 and August-September 1949 was 98% browse (few species) and forbs (many species). Common sagebrush was the most important item.

GREEN, HUBERT V. Occurrence of Echinococcus granulosus in elk (Cervus canadensis nelsoni), Banff National Park. The Canadian Field-Naturalist 63(5): 204-205. September-October 1949.
Lungs of more than 1000 elk were examined during the 4 winters 1944-45 to 1947-48. The larval stage of this tapeworm occurred mostly in animals more than 2 years old. The coyote is thought to be the major terminal host.

JONES, PAUL V., JR. Experimental management of antelope. 31 pages, illus. Texas Game, Fish & Oyster Commission, FA Report Series No. 3. August 1949.
During the period 1947 to 1949 there were 2300 antelope in the 72 counties of the upper and lower plains region of Texas. Killing of fawns by coyotes is the chief factor in keeping the population down. Large-scale poisoning of coyotes with 1080 is believed to be the best way to quickly increase the antelope population. Restocking vacant range may also increase the population.

SHUMAN, RICHARD F. Bear depredations on red salmon spawning populations in the Karluk River system, 1947. The Journal of Wildlife Management 14(1): 1-9, illus. January 1950.
Nearly one-third of the fish that entered one tributary were killed by bears before spawning. The loss in terms of propagation was not evaluated, but the fish lost in the entire drainage were estimated to have a commercial pack value of more than $100,000.. Since the Karluk salmon runs are depleted, it is evident that immediate decrease in the bear population is needed.

SKINNER, CURTIS K. Problem of surplus elk in Yellowstone National Park. 4 pages, illus. September 1948.
In 1938 it was determined that the grazing capacity of the Park's winter range was about 7,000 elk. During the 6 years since 1942 there was an average yearly excess of 2,000 elk. "Most desirable methods of controlling size of the elk herd are (1) by live shipment of surpluses to other areas or (2) by legal hunting as the animals migrate beyond the park boundaries. If these two methods should fail to remove surpluses, slaughter within the park might become the only alternative."--M. A. Slattery.

MAMMALS--BIG GAME (ELK, ANTELOPE, ETC.)--Continued

SKUNCKE, FOLKE. Älgen (The Elk). 400 pages, illus. P. A. Norstedt and Sons, Stockholm, Sweden. 1949. Price about $8.00.

The author draws upon more than 30 years of experience for this book on the Scandinavian elk, or moose (Alces sp.). Past history, current status, and taxonomy are treated briefly. Life history and ecology sections include observations on food habits, reproduction (fortified with observations on captive animals), antler development, and typical habitat as related to time of day, season, and weather. Interesting side lights are chemistry of moose milk compared with that of other animals, and distribution and abundance of moose in Sweden with reference to the calcium content and pH of the soil. About half of the book is devoted to hunting; but in this section are found many useful data on sign, anatomy, tooth development, and sex and age determinations of the animal at hand and at a distance. The final section presents the recorded moose kill statistics for Sweden and an elaborate discussion of the desired composition and increment of a managed population. Forest damage and methods of prevention are described. Calculations are made of a moose's value and the capital worth of Sweden's resource. The book contains much information nowhere else available in current literature. No English summary is presently available.--C. E. Carlson.

MAMMALS--FURBEARERS (GENERAL)

ASHBROOK, FRANK G. Annual fur catch of the United States. 23 pages. U. S. D. I., Fish and Wildlife Service, Wildlife Leaflet 315. February 1950.

Tables for most states show the catch by species for the 5 years ending with 1948-49 (See page 10 of Wildlife Review No. 57 for the leaflet under the same number, title, and author that covered the period through 1947-48.).

CRICHTON, V. Registered traplines. Sylva 4(2): 3-15, illus. 1948.

The author describes the way the trapline license program works on northern Ontario Crown lands. "It is the Department's hope then, when trappers see the advantages given to them by the creation of these new trapline regulations, Ontario will become a Province of fur farmers."

HAYNE, DON W. Two methods for estimating population from trapping records. Journal of Mammalogy 30(4): 399-411, illus. November 1949.

The author discusses the usefulness and limitations of mark-and-release experiments and removal experiments.

SEAGEARS, CLAYT. Furs of New York, past and present. The New York State Conservationist 4(3): 20-21, illus. December 1949-January 1950.

Comparative photos of pelts and brief statements of status of 18 kinds of fur animals. Three of these, wolverine, lynx and wolf, no longer live in the State. There were enough fishers to permit trapping in 1949. New York ranks next to Louisiana in top fur production.

MAMMALS--FURBEARERS (GENERAL)--Continued

SELF, J. TEAGUE and McKNIGHT, THOMAS J. Platyhelminths from furbearers in the Wichita Mountains Wildlife Refuge, with especial reference to Oochoristica spp. The American Midland Naturalist 43(1): 58-61. January 1950.
The authors report a total of 7 species from 17 feral house cats, 3 spotted skunks, 34 striped skunks, 15 opossums, and 69 coyotes.

MAMMALS--FURBEARERS (BEAVER)

FRILEY, CHARLES E., JR. Use of the baculum in age determination of Michigan beaver. Journal of Mammalogy 30(3): 261-267, illus. August 1949.
Measurements of baculum combined with those of skull are accurate means of separating yearlings, two-and three-year-olds, and four-year-olds.

GRASSE, JAMES E. Beaver trapping and transplanting. Wyoming Wild Life 13(9): 10-17,34, illus. October 1949.
The author describes techniques and experiences in Wyoming. "It is planned that during the 1949 livetrapping season we will retrap as many beaver as possible which were planted in 1947 and 1948, so that accurate growth and development studies can be made."

GRASSE, JAMES E. Beaver and trout. Wyoming Wild Life 13(11): 4-13,34, illus. December 1949.
From observations in Wyoming and reports of observations elsewhere, the author concludes that the activities of beaver usually benefit trout. "The relation of trout production to the activities of beaver is an extremely important study,....." "The introduction or reintroduction of beaver into more than 100 streams which did not support beaver before planting by the beaver survey in the last three years is an important preliminary step toward such a study."

STEPHANSKY, BERNARD A. Nuisance beavers. Michigan Conservation 19(1): 15-19, illus. January-February 1950.
In Michigan's Upper Peninsula beaver damage control has become a big problem since the last trapping season in 1946. The author describes types of damage and how they are remedied by livetrapping and moving beaver to other areas and by removal of dams.

TEVIS, LLOYD, JR. Summer behavior of a family of beavers in New York state. Journal of Mammalogy 31(1): 40-65, illus. February 1950.
The author studied a family of 7 beavers in the summer of 1947 at Rensselaerville, eastern New York. He reports in detail on their diving, voice, daytime behavior, feeding, dam and lodge maintenance, responses to weather, relations to muskrats, activity of kits, and social behavior. These beaver cut trees and built dams beyond their needs.

MAMMALS--FURBEARERS (BEAVER)--Continued

VESALL, D. B.; NYMAN, R. W.; and GENSCH, R. H. The relation of beaver to swamp timber management in Koochiching County, Minnesota. Proceedings, Society of American Foresters' Meeting, December 17-20, 1947. Pages 195-200, illus. 1948.

"Beaver and timber production are imcompatible, at least during wet years, on coniferous swamp type timber land which is interspersed with drainage ditches."

MAMMALS--FURBEARERS (MUSKRAT)
(See also BIRDS--UPLAND GAME (GENERAL), Thompson & Baumann)

EDWARDS, ROBERT L. Internal parasites of central New York muskrats (Ondatra z. zibethica L.) The Journal of Parasitology 35(5): 547-548. October 1949.

More than 50 muskrats were examined in the winters of 1945-46 and 1946-47. They contained 6 species of trematodes, 4 cestodes, and 1 nematode.

LOW, JESSOP B. Muskrat harvest in Utah. 18 pages, illus. Utah Cooperative Wildlife Research Unit, Utah State Agricultural College, Logan. 1949?

During the 1946 spring and fall seasons, about one-third of the licensed trappers reported a take of more than 64,000 muskrats. The calculated harvest in the spring season was 186,000 muskrats, in the fall 78,000. Spring trapping was preferred.

SNEAD, I. EDWIN. A family type live trap, handling cage, and associated techniques for muskrats. The Journal of Wildlife Management 14(1): 67-79, illus. January 1950.

MAMMALS--FURBEARERS (COYOTE & FOXES)
(See also WILDLIFE (GENERAL)--VALUES, Robinson)

CHASE, GREENLEAF T. New York's coyote control problem. The New York State Conservationist 4(3): 14-15, illus. December 1949-January 1950.

Reports of coyote-like animals during the past several years led to a trapping program in Lewis County in 1949. 43 coyotes and coyote-dog hybrids were taken. Their food from May to September was similar to that of foxes. There is no likelihood that they can be exterminated.

COWAN, IAN McTAGGART. Rabies as a possible population control of arctic Canidae. Journal of Mammalogy 30(4): 396-398, illus. November 1949.

There was a sharp decline in the red fox population of the Mackenzie Delta region during the winter of 1944-45. Accounts of ailing foxes given the author by inhabitants of the region led him to believe that the decline was due to rabies or an epidemic disease strongly resembling rabies.--M. A. Slattery.

MAMMALS--FURBEARERS (COYOTE & FOXES)--Continued

FICHTER, EDSON. Watching coyotes. Journal of Mammalogy 31(1): 66-73. February 1950.
In 1948 the author made lengthy observations of 2 pairs of adults and 2 litters of pups at 4 den sites in Nebraska farming country.

GEORGE, JOHN L. and GEORGE, JEAN. Vulpes, the red fox. 184 pages, illus. E. P. Dutton & Co., Inc., New York, 1948. $2.50.
The attractively told and illustrated story of a fox and his many associates, including man, in a Maryland Piedmont environment.

SAMPSON, F. W. and NAGEL, W. O. Controlling coyote and fox damage on the farm. 22 pages, illus. Missouri Conservation Commission, Bulletin No. 18. 1949?
The authors give details on trapping--still the best way known to stop predation.

SHELDON, WILLIAM G. Denning habits and home range of red foxes in New York State. The Journal of Wildlife Management 14(1): 33-42. January 1950.
The author made this study in central New York in 1946-1948. He tagged and released 120 red foxes, examined 50 den sites, and made many other field observations. Foxes were gregarious during the denning season. Males wandered widely in the fall, females less widely.

SHELDON, WILLIAM G. Reproductive behavior of foxes in New York State. Journal of Mammalogy 30(3): 236-246, illus. August 1949.
Most of the data presented are based on the macroscopic examination of reproductive tracts from 175 female red and 90 female gray foxes. They include sex ratio, breeding periods, litter sizes, and growth and development.

SWITZENBERG, D. F. A look at the fox bounty. Michigan Conservation 19(1): 3-6, illus. January-February 1950.
A bounty on foxes went into effect in Michigan in the fall of 1947. It apparently caused a rise in the trapping kill during the 1947-48 season, but there was no significant drop in the fox population.

WRIGHT, THOMAS J. A study of the fox in Rhode Island. 21 pages, illus. Rhode Island Department of Agriculture and Conservation, Division of Fish and Game, Pamphlet No. 3. October 1949.
A review of the operation of bounty laws from 1893 to 1933 and from 1940 to date. An estimated 1275 foxes were killed in 1943, 606 in 1948.

MAMMALS--FURBEARERS (MINK, ETC.)

BASSETT, CHARLES F. and LLEWELLYN, LEONARD M. The molting and fur growth pattern in the adult mink. The American Midland Naturalist 42(3): 751-756, illus. November 1949.

MAMMALS--FURBEARERS (MINK, ETC.)--Continued

BRADT, G. W. Farm cat as predator. Michigan Conservation 18(4): 23-25. July--August 1949.

The author bases a defense of the domestic cat as a predator of wildlife upon observations he made of prey brought into his home at the Rose Lake Wildlife Experiment Station near East Lansing. His records show the following taken in a period of 18 months: 1600 mice, 3 spermophiles, 6 barn rats, 4 young rabbits, 15 shrews, 54 English sparrows, 1 flicker, 1 meadowlark, 1 robin, 2 goldfinches, 2 chipping sparrows, 1 white-throated sparrow. Several studies of contents of cat's stomachs show also that their prey is mostly rodents. The author states that "While the record of this cat may not be characteristic of cats in general, it is a positive statistical record, and when considered with the few authentic food records available, does cast a doubt upon the traditional idea that cats are vicious predators on song birds and game."--M. A. Slattery.

GEORGE, JOHN L. and GEORGE, JEAN. Vison, the mink. 184 pages, illus. E. P. Dutton & Co., Inc., New York. 1949. $2.50.

Similar to the authors' story of a red fox (page 26) in the way it tells about and illustrates life in a Maryland Piedmont environment.

GUILDAY, JOHN E. Winter food in Pennsylvania mink. Pennsylvania Game News 20(9): 12,32, illus. December 1949.

Digestive tracts of 105 mink, taken in southwestern Pennsylvania in 1947 and 1948, contained 25 items. Those that occurred most often were mice, fish, crayfish, and insects.

McCABE, ROBERT A. Notes on live-trapping mink. Journal of Mammalogy 30(4): 416-423, illus. November 1949.

23 mink, including repeats and returns, were trapped in a Madison, Wis. area from 1944 to 1947. Weasels replaced mink in the marsh habitat of the study area when the mink population was low. The range of a male mink was greater than the 1100-acre area; the females moved very little.

PETRIDES, GEORGE A. Sex and age determination in the opossum. Journal of Mammalogy 30(4): 364-378, illus. November 1949.

MAMMALS--RODENTS (GENERAL)

ANONYMOUS. Plague infection reported in the United States in 1947. Public Health Reports 63(34): 1102-1105. August 20, 1948.

There was a fatal case of plague in Modoc Co., California in June. The victim was believed to have acquired the infection from wood rats in the vicinity of Alturas. During 1947, 6 western states (Arizona, California, Colorado, Kansas, Texas, and Washington) were reported to have wild rodents infected with plague. The animals found infected, either in their own tissues or in their ectoparasites (fleas, lice, and ticks), were ground squirrels, tree squirrels, chipmunks, field mice, meadow mice, pocket mice, white-footed deer mice, grasshopper mice, kangaroo mice, wood rats, pack rats, prairie dogs, and marmots.

MAMMALS--RODENTS (GENERAL)--Continued

HAMILTON, W. J., JR. The reproductive rates of some small mammals. Journal of Mammalogy 30(3): 257-260. August 1949.
The author presents data on 2 shrews and 5 rodents that ".....lend support to the assumption that some small mammals, under natural conditions, successfully mate shortly after parturition and produce successive litters in rapid succession during part of the breeding season."

MANVILLE, RICHARD H. A study of small mammal populations in northern Michigan. 83 pages, illus. Museum of Zoology, University of Michigan, Miscellaneous Publications No. 73. August 16, 1949. $1.25.
The author made this study in the Huron Mountain region of the Upper Peninsula of Michigan in the summers of 1940 to 1942. Each of 8 plots was in a different forest type. 10 species of rodents and 3 species of shrews were trapped. The author attributes progressive increases in populations of different species to favorable environmental conditions.

NORRIS, J. J. Effect of rodents, rabbits, and cattle on two vegetation types in semidesert range land. 23 pages, illus. New Mexico Agricultural Experiment Station, Bulletin 353. January 1950.
This bulletin reports on a study conducted from 1939 to 1948 in southern New Mexico. Exclusion of rodents and rabbits from mesquite-snakeweed types ".....can bring about striking improvement in the stand of valuable grasses." However, "It is believed that, in spite of the increased grass forage resulting from rodent and rabbit protection in mesquite-snakeweed types, the profits will not offset control costs." "In well preserved black grama grassland, no appreciable benefit results from rodent and rabbit protection. This is not surprising, since population studies indicate that rodents and rabbits are seldom numerous in well managed grassland."

STORER, TRACY I. and MANN, MARGERY P. Bibliography of rodent control. 324 pages (plus a 57-page bibliography of Russian literature). National Research Council, Insect Control Committee Report No. 182. June 1946.
3401 non-Russian references are classified under general headings, species or groups of rodents, baits and poisons, fumigants, virus, rodents and disease, and miscellaneous. There are 456 unclassified Russian references.

STORER, TRACY I. and MANN, MARGERY P. Bibliography of rodent control (first supplement) and bibliography of antu. 76 pages. Public Health Service, National Institute of Health, Report No. 1 under Grant-in-aid RG-273. 1948.
The main bibliography of 589 references is not classified but it is thoroughly indexed. There are 109 references on ANTU.

MAMMALS--RODENTS (MICE, ETC.)
(See also MAMMALS--INSECT-EATERS, Jameson)

EVANS, FRANCIS C. A population study of house mice (Mus musculus) following a period of local abundance. Journal of Mammalogy 30(4): 351-363, illus. November 1949.

House mice were live-trapped indoors and out at Davis, California in 1942. 235 mice were caught in one room. "This indoor population declined rapidly and disappeared completely by June. A new population began to develop in November,....." Slow starvation may have been the major factor in the decline. The outdoor population was smaller. Movements between indoor and outdoor populations were rare; but the new indoor population probably started from the outdoor.

HAYNE, DON W. Apparent home range of Microtus in relation to distance between traps. Journal of Mammalogy 31(1): 26-39, illus. February 1950.

"Perhaps the home range of an animal cannot be determined by means of a grid setting of traps....."

LLEWELLYN, LEONARD M. Reduction of mortality in live-trapped mice. The Journal of Wildlife Management 14(1): 84-85. January 1950.

Brought about by using corn for bait or as a bait supplement.

MORRIS, R. F. Differentiation by small mammal predators between sound and empty cocoons of the European spruce sawfly. The Canadian Entomologist 81(5): 114-120, illus. May 1949.

Cage and field experiments in eastern Canada showed that the ability to distinguish between sound cocoons and dead ones is highly developed in shrews, moderately so in Peromyscus and practically lacking in Clethrionomys. Efficiency in selecting cocoons is closely related to food habits: the more insectivorous the species, the more marked its differentiating ability.--R. T. Mitchell.

REYNOLDS, H. G. and GLENDENING, G. E. Merriam kangaroo rat a factor in mesquite propagation on southern Arizona range lands. Journal of Range Management 2(4): 193-197, illus. October 1949.

Mesquite seeds, a preferred food, are buried in shallow caches. Those not rediscovered germinate during favorable years. Decrease of perennial grass and increase of mesquite favors kangaroo rats. Attempts to retard mesquite through livestock reduction should also consider control of the kangaroo rat.

SANDERSON, GLEN C. Small-mammal population of a prairie grove. Journal of Mammalogy 31(1): 17-25, illus. February 1950.

The author thoroughly trapped a half-acre chokecherry-buroak-hawthorn grove in southern Manitoba in July and August 1947. The population was not entirely removed after 38 days. Microtus was dominant in the grove. Peromyscus was abundant in the surrounding fallow fields.

MAMMALS--RODENTS (MICE, ETC.)—Continued

SCHMIDT-NIELSEN, BODIL and SCHMIDT-NIELSEN, KNUT. Evaporative water loss in desert rodents in their natural habitat. Ecology 31(1): 75-85, illus. January 1950.

Observations made in southern Arizona during the driest time of year showed a considerably higher humidity in the burrows of 2 species of kangaroo rats than outside. "The formation of metabolic water will, when the animals breathe the fairly moist air in the burrows, lead to an ultimate gain in water." There are diagrams of the burrows.

YORK, CHRISTOPHER L. Notes on home ranges and population density of two species of heteromyid rodents in southwestern Texas. The Texas Journal of Science 1(3): 42-46. September 1949.

31 kangaroo rats and 35 pocket mice were live-trapped and repeatedly recaptured on about 28 acres of desert scrub land in northern Presidio County in June and July 1948.

MAMMALS--RODENTS (POCKET GOPHERS, ETC.)

INGLES, LLOYD G. An improved live trap for pocket gophers. The Murrelet 30(3): 55-56, illus. September-December 1949.

INGLES, LLOYD G. Ground water and snow as factors affecting the seasonal distribution of pocket gophers, Thomomys monticola. Journal of Mammalogy 30(4): 343-350, illus. November 1949.

Movements of 35 pocket gophers that were living in 2 small meadows in the Sierra Nevadas in Fresno Co., California were studied from April 1947 to November 1948. It was found that "In summer the animals live in burrows on ground where the water table is deeper than 4.3 feet. They will explore areas where the water table comes within one-half foot of the surface when deeper drier soil is nearby for a nest location." "As winter approaches those animals living at the margins of a meadow move underground onto higher ground beneath the trees." In late spring they return to the meadows they occupied the previous summer.--M. A. Slattery.

PRICE, W. ARMSTRONG. Pocket gophers as architects of mima (pimple) mounds of the western United States. The Texas Journal of Science 1(1): 1-17, illus. March 1949.

"Enough is now known to state that the pocket gopher develops a positive mound-building activity when faced with certain types of marginal living conditions." "A mature mima mound has been built in 5 years....." and they ".....persist for thousands of years on stabilized plains."

SHAPIRO, JACOB. Ecological and life history notes of the porcupine in the Adirondacks. Journal of Mammalogy 30(3): 247-257. August 1949.

The author studied porcupines at Newcomb, New York in the spring and summer of 1946 and the late winter of 1947. Winter home range was approximately 13 acres per animal. Preferred winter foods were hemlock, red spruce, sugar maple, yellow birch, and balsam fir trees 2-10 inches in diameter. Damage to timber was not great.

MAMMALS--RODENTS (POCKET GOPHERS, ETC.)--Continued

WASHBURN, MEL. We're planting squirrels now. Louisiana Conservationist 2(4): 4-5, 21-22, illus. December 1949.

This fall 1000 gray squirrels were brought from Wisconsin and liberated in the West Bay game preserve in Allen Parish. The gray squirrel population had dwindled to such a low point that restocking became necessary. It is hoped that these 1000 grays will add at least a half million to Louisiana's squirrel population if they are permitted to propagate undisturbed for at least 5 years.--M. A. Slattery.

MAMMALS--RABBITS
(See also MAMMALS--RODENTS (GENERAL), Norris)

BENNETT, LOGAN. Is your rabbit hunting doomed? Outdoorsman 91(6): 4, 6-7, illus. December 1949.

The author gives suggestions to hunters on how to improve the rabbit's habitat and supplement its food supply. These practices will repay the hunter by increased yields.--M. A. Slattery.

SEVERAID, JOYE HAROLD. The pigmy rabbit (Sylvilagus idahoensis) in Mono County, California. Journal of Mammalogy 31(1): 1-4. February 1950.

The author describes the ecology and behavior of this rabbit in the sagebrush and rabbitbrush country at Bodie, Mono County.

MAMMALS--INSECT-EATERS
(See also MAMMALS--RODENTS (GENERAL), Hamilton; Manville; MAMMALS--RODENTS (MICE, ETC.), Morris)

JAMESON, E. W., JR. Some factors influencing the local distribution and abundance of woodland small mammals in central New York. Journal of Mammalogy 30(3): 221-235, illus. August 1949.

From January 1947 to July 1948 the author trapped small-mammals in 6 wooded areas in Tompkins Co., New York. He describes the region and the areas; discusses small mammal burrows; and summarizes his observations of 10 species of moles, shrews, and mice. He believes that none of these depends upon any particular kinds of plants or plant associations; but rather, that their distribution and abundance are influenced by directional exposure, type of humus (and its supply of arthropods), and competition between species.

MOHR, CHARLES E. and others. The caves of Texas. 136 pages, illus. The National Speleological Society, Bulletin 10. April 1948.

Among more than two dozen articles on different aspects of cave geology, exploration, and life are 7 articles on the occurrence, flight, predators, and uses of Texas bats. At least 15 species are believed to live in Texas.

MAMMALS--MARINE

SCHEFFER, VICTOR B. Dolphins--little known mammals of the Pacific. Pacific Discovery 2(4): 18-22, illus. July-August 1949.

First-hand observations on the habits of Dall porpoise and striped dolphin; and a summary of information on 7 other west coast species.

BIRDS (GENERAL)--BEHAVIOR

STORER, JOHN H. The flight of birds. xiv + 94 pages, illus. Cranbrook Institute of Science, Bulletin 28. January 1949. $2.50. (Copied from The Auk for April 1949, page 216).

A review by H. I. Fisher says, in part: "In this present book, Mr. Storer has presented in clear, understandable terms a brief summary of our knowledge of the mechanics of flight by birds in the light of modern aerodynamics. He begins his discussion with a short introduction on the general principles of aerodynamics, which is well illustrated by diagrams. These facts are then applied to bird flight, including such topics as lift, tilting, stalling angle, drag, turbulence, short versus long wings, wing flaps, feather structure, rudder action of the tail, soaring, gliding and formation-flying. Most of these subjects are illustrated by excellent photographs of wild birds in flight, often in slow-motion sequence,....."

BIRDS (GENERAL)--DISEASES

BYRD, ELON E. and DENTON, J. FRED. The helminth parasites of birds. I. A review of the trematode genus Tanaisia Skrjabin, 1924. The American Midland Naturalist 43(1): 32-57, illus. January 1950.

The 4 species described are recorded from 7 orders and more than 50 species of birds. Records are from Asia, Europe, North America, and South America.

BIRDS (GENERAL)--FAUNAS & MANUALS
(See also BIRDS--SONGBIRDS, Headstrom)

BORROR, DONALD J. A check list of the birds of Ohio, with the migration dates for the birds of central Ohio. The Ohio Journal of Science 50(1): 1-32. January 1950.

More than 150 articles and 8 museums are cited in substantiation of the records.

GODFREY, W. EARL and WILK, A. L. Birds of the Lake St. John region, Quebec. 32 pages, illus. National Museum of Canada, Bulletin No. 110 (Biological Series No. 36). 1948. 25¢.

Field data and specimens for this list of 133 species were obtained by the National Museum's Lake St. John biological expedition in 1946.--M. A. Slattery.

BIRDS (GENERAL)--FAUNAS & MANUALS--Continued

GREY, JOHN H., JR. and STEVENS, CHARLES E., JR. The birds of Albemarle County, Virginia. The Raven 20(11 & 12): 66-111. November-December 1949.
A well-annotated list of 244 species and subspecies. It is based mostly on recent work by 8 University of Virginia men.

GRISCOM, LUDLOW. The birds of Concord. 340 pages, illus. Harvard University Press, Cambridge, Mass. 1949. $5.00.
A review by David E. Davis on page 239 of The Wilson Bulletin for December 1949 says, in part: "In this book, the most expert field ornithologist of our generation compares his notes with those of William Brewster, the most expert of the preceding generation. The result is a treasure of data concerning changes in the avifauna of the region around Concord, Mass." "Part I of the book, titled Population Trends, describes the basic ecological factors of the region and of the birds. Then follows a summary of fluctuations in animals and a description of the increases and decreases in populations. Part II describes the present bird life and gives in a systematic list the abstracted notes of Brewster and others."

HENDRICKS, BARTLETT. Berkshire birds. The Bulletin of the Massachusetts Audubon Society 32(8): 291-298, illus. to 34(1): 34-38, illus. December 1948 to February 1950.
A well-annotated list of the 270 birds (more than 100 of them summer residents) recorded in this extreme western Massachusetts county. The introduction includes descriptions of the county's topography and migration routes, an account of the history of bird study in Berkshire County, and a discussion of identification. Several large-scale maps and a graphic way of showing seasonal occurrence of each species adds to the list's interest and usefulness.

JOHNSTONE, WALTER B. An annotated list of the birds of the East Kootenay, British Columbia. 87 pages, illus. Occasional Papers of the British Columbia Provincial Museum No. 7. December 1949. 75¢.
This list is based on observations made between February 1937 and June 1949. The region described is in the southeastern part of the Province, northward to about latitude 52° and westward to the Arrow Lakes. A map, several good photos, a description of the physiography, and descriptions of 4 biotic areas give a picture of the environment. The list of birds emphasizes occurrences during migration and information on nesting.

PALMER, RALPH S. Notes on birds of the upper Allagash drainage and vicinity of Maine, 1948. Bulletin of the Maine Audubon Society 5(4): 63-76, illus. October 1949.
The author's notes on 58 species also include his observations made in 1941 and the observations of several other individuals.

BIRDS (GENERAL)--FAUNAS & MANUALS--Continued

PHILLIPS, HOMER W. and THORNTON, WILMOT A. The summer resident birds of the Sierra Vieja Range in southwestern Texas. The Texas Journal of Science 1(4): 101-131. December 1949.
63 species were found during June and July 1948.

POOLE, EARL L. A half century of bird life in Berks County, Pennsylvania. 139 pages, illus. Reading Public Museum and Art Gallery, Bulletin No. 19. 1947.
This bulletin summarizes abundance and distribution of the birds and major changes in the environment. It is based largely on the author's observations of the past 30 years.

SPRUNT, ALEXANDER, JR. and CHAMBERLAIN, E. BURNHAM. South Carolina bird life. Contributions from the Charleston Museum 11. 585 pages, illus. University of South Carolina Press, Columbia. 1949. $10.00.
An authoritative account of 442 species and subspecies, beautifully illustrated with more than 30 colored plates and a large number of photographs.

BIRDS (GENERAL)--POPULATIONS
(See also BIRDS (GENERAL)--FAUNAS & MANUALS, Griscom; Poole)

LACK, DAVID. The significance of clutch-size. The Ibis 89: 302-352 and 90(1): 25-45. April 1947 and January 1948.
In The Ibis for April 1947 are "Part I.--Intraspecific Variations." and Part II.--Factors Involved." In the January 1948 number is "Part III.--Some Interspecific Comparisons." Data are based on published information; and these are presented in detailed lists showing (1) the usual clutch-size of all regular British breeders, (2) comparisons between India and Europe, (3) east-west comparisons, (4) decline in clutch-size in late layings, (5) variability in clutch-size within species, and (6) average clutch-size of mid-European species. Some of the conclusions are as follows: Clutch-size in many groups increases from the tropics toward the poles. The same groups show west to east increases in Europe. Clutch-size of various rodent-predators is greater during rodent plagues. Clutch-size has changed in some species after introduction to a new region. In mid-European passerines there is a tendency toward large clutches in species that have safe nesting sites and abundant food.

STEWART, ROBERT E., editor. Thirteenth breeding-bird census. Audubon Field Notes 3(6): 255-272. December 1949.
The 31 censuses reported are from 14 states. Each is in a different habitat--uniform (field, apple orchard, virgin hemlock, etc.) or mixed (pond and border, shrubby field and forest edge, etc.).

BIRDS--WATERFOWL

ANONYMOUS. Severn Wildfowl Trust, annual report 1948. 73 pages, illus. The Severn Wildfowl Trust, Slimbridge, Gloucestershire, England. 1948. 5 shillings.

"The work of the Trust is in part educational and in part scientific." "The scientific studies are mainly in the field of pure ornithology--of learning about little-known birds in order to add to knowledge. But there is a practical aspect of the Trust's scientific work, and that is to provide data which will help to arrest the decline in the world's wildfowl." "The work at the New Grounds falls into three spheres; the study of the winter flocks of wild geese; the catching of ducks in the decoy for ringing; and the study of the comparative collection of tame waterfowl."

ANONYMOUS. The second annual report of the Severn Wildfowl Trust, 1948-1949. 137 pages, illus. The Severn Wildfowl Trust, Slimbridge, Gloucestershire, England. 1949. 7 shillings and sixpence.

This report includes accounts of the wild geese, duck banding and recoveries, and the waterfowl collection at the New Grounds. Also, there is a list of all the birds recorded at the New Grounds, 25 pages of photographs, and an illustrated "Key to the Wildfowl of the World" by Peter Scott.

CARTWRIGHT, B. W. The western Canadian waterfowl breeding grounds. Proceedings of the 1948 Northeastern Game Conference. Pages 132-135. 1948.

Long-time and recent conditions in an area of 2¼ million square miles.

CRISSEY, WALTER F. and others. Waterfowl populations and breeding conditions--summer 1949, with notes on woodcock and Wilson snipe. 242 pages, illus. U. S. D. I., Fish and Wildlife Service; Canada Dept. Mines and Resources, Dominion Wildlife Service; Special Scientific Report: Wildlife No. 2. December 1949.

More than 40 separate reports deal generally or locally with waterfowl in the Far North, Alaska, Ungava Peninsula, British Columbia, Alberta, Saskatchewan, Manitoba, southern Ontario and Quebec, the Maritime Provinces, the Northeastern states, Washington, Oregon, California, Montana, Colorado, the Dakotas, Minnesota, Iowa, Wisconsin, Michigan, Indiana, Ohio, New York, Utah, and Idaho; with woodcock in eastern Canada, the Northeast, Minnesota, and Pennsylvania; and with Wilson snipe in eastern Canada and Iowa. Most of the reports have summaries and many have large-scale or small-scale maps.

CRITCHER, STUART. Renal coccidiosis in Pea Island Canada geese. Wildlife in North Carolina 14(1): 14-15, 22, illus. January 1950.

"Approximately 500 Canada geese died on the Pea Island Migratory Waterfowl Refuge during February, March and April of 1949." There was a shortage of food and extremely unsanitary conditions. All of the birds examined were less than 1 year old. Their death appeared to be due to renal coccidiosis, caused by Eimeria truncata. Snow geese and ducks apparently were not affected.

BIRDS--WATERFOWL--Continued

COTTAM, CLARENCE. Our waterfowl problem and program. Proceedings of the 1948 Northeastern Game Conference. Pages 125-131. 1948.
The supply is down and the demand is greater than ever. A continent-wide program of building up waterfowl populations involves public support, improvement of nesting and wintering grounds, and research.

EAST, BEN. The Canada goose can be brought back. Outdoor Life 105(2): 38-40, 96, illus. February 1950.
The story of the development, since 1934, of the Seney National Wildlife Refuge in the Upper Peninsula of Michigan; and how, from a flock of 300 pinioned geese in 1936, the locally raised population increased to 1860 in the fall of 1946.

GRISCOM, LUDLOW. The present status of New England waterfowl. Proceedings of the 1948 Northeastern Game Conference. Pages 79-85. 1948.
Waterfowl have increased in New England in the past 35 years. This is due to several circumstances, including a 90% decline in shooting pressure. There is a summary of the status of each species.

HANSON, HAROLD C. Trapping and handling Canada geese. 8 pages, illus. Illinois Natural History Survey, Biological Notes No. 20. May 1949.

MENDALL, HOWARD L. Water levels and waterfowl management. Proceedings of the 1948 Northeastern Game Conference. Pages 86-88. 1948.
Stabilization of water has increased waterfowl populations in Maine.

SCOTT, PETER. Key to the wildfowl of the world. Pages 91-137, illus. in The second annual report of the Severn Wildfowl Trust, 1948-1949. The Severn Wildfowl Trust, Slimbridge, Gloucestershire, England. 1949. 2 shillings and sixpence for the Key in booklet form.
This key to 145 species comprises 23 plates of drawings facing pages of text. The text gives ranges; the drawings, which are mainly of birds in full breeding plumage, call attention to distinguishing marks.

SINGLETON, JOHN R. Coastal drainage problems in relation to waterfowl. The Texas Journal of Science 1(3): 25-28. September 1949.
There is no Soil Conservation Service plan to drain any marsh land in Jefferson, Chambers, and Liberty Cos., Texas. However, drainage of higher areas to or through the marshes has excessively freshened some marshes, and withholding of water for rice irrigation has greatly increased the salinity of others. "In order to maintain the waterfowl marshes on the Texas Coast, it is essential that water levels be constant. This is necessary for growth of marsh habitat of waterfowl and muskrats, as well as for insuring breeding success of the native mottled mallard and muskrats."

BIRDS--WATERFOWL--Continued

WRIGHT, BRUCE S. Black ducks in the maritime provinces and Canada. Proceedings of the 1948 Northeastern Game Conference. Page 72. 1948.
An anonymous abstract mentions the drop in the breeding population of a New Brunswick marsh and that bald eagles apparently are not detrimental to ducks.

YOCOM, CHARLES F. A survey of waterfowl in eastern Washington in 1947. The Murrelet 30(3): 46-52, illus. September-December 1949.
A map shows the 5 principal waterfowl breeding areas and, in addition, the goose breeding areas along the Columbia and its tributaries. Tables show (1) total number of waterfowl seen, by species and areas, (2) brood sizes of age classes, by species, and (3) species composition of the brood population. The mallard is the commonest breeder in eastern Washington; redhead and ruddy are next.

BIRDS--FISH-EATERS

ALEXANDER, W. B. The index of heron population, 1948. British Birds 42(3): 81-83. March 1949.
146 heronries were reported in 1948 (12 less than in 1947). The increase from 1947 in 111 heronries in which the population is known for one or more normal years was 5%.

ALLEN, ROBERT PORTER. The flame birds. 233 pages, illus. Dodd, Mead & Co., New York. 1947. $3.50.
This is the author's ".....personal account of the Spoonbill and his world....." in Florida and Texas. See Wildlife Review No. 36, page 33 for an abstract of Allen's formal report on the roseate spoonbill investigation.

BEHLE, WILLIAM H. Report on the colonial nesting birds of Great Salt Lake, 1947-49. The Condor 51(6):268-270. November-December 1949.
"The changes in the bird colonies of Great Salt Lake involve principally the White Pelicans and California Gulls." The pelicans have become greatly reduced since 1932, but now seem to be increasing. The gull population of the region has stayed about the same, but there has been a mass shifting of nest sites.

LAWRENCE, GEORGE E. The diving and feeding activity of the western grebe on the breeding grounds. The Condor 52(1): 3-16, illus. January-February 1950.
Observations at Clear Lake, Lake Co., California, April to September 1947 are the basis for this report. The author reports on patterns of diving behavior, courtship behavior, daily activity cycle, flocking activity, and food (81% fish, 17% insects in 27 stomachs). Most of the fish eater were bluegill perch.

BIRDS--CRANES & RAILS

BRYANT, C. E. and AMOS, BRUCE. Notes on the crakes of the genus Porzana around Melbourne, Victoria. The Emu 48 (pt.4): 249-275, illus. May 1949.
Behavior and ecology of 3 relatives of the sora, as observed by the authors in 1948 and 1949.

MILLER, RICHARD F. The Florida gallinule. Breeding birds of the Philadelphia region (Part III). Cassinia 36: 1-16, illus. 1946.
History in the region, ecological history of habitats, monthly occurrence, nesting, behavior, and enemies--all described in detail.

WALKINSHAW, LAWRENCE H. The sandhill crane in the Bernard W. Baker Sanctuary, Michigan. The Auk 67(1): 38-51, illus. January 1950.
The author studied cranes from 1930 to 1948 on this 571-acre marsh sanctuary in Calhoun Co., Michigan. He describes the vegetation and animals of the area, and crane migration, nesting, feeding, and other behavior.

WALKINSHAW, LAWRENCE H. The sandhill cranes. 202 pages, illus. Cranbrook Institute of Science, Bulletin No. 29. 1949. $3.25.
This study ".....is the result of fifteen years' investigation of the four subspecies of Sandhill Crane (Grus canadensis) in Alaska, Canada, the United States, Cuba, and the Isle of Pines." In 70,000 miles of travel the author observed nests in Michigan, Idaho, Oregon, Alberta, Florida, Mississippi, and Georgia; and made other observations in Wisconsin, Utah, Yellowstone Park, Indiana, New Mexico, Texas, and the Isle of Pines. The book makes use of the observations of many other people, but is particularly valuable and interesting because of its great amount of first-hand experiences. There are chapters on plumages, voice, behavior, food, territory, nesting, young, the crane from fall to spring, and the history of North American populations.

BIRDS--SHOREBIRDS

MILLER, RICHARD F. The killdeer. Breeding birds of the Philadelphia region (Part IV). Cassinia 37: 1-8. 1949.
History in the region, monthly occurrence, nesting, behavior, and interrelationships.

BIRDS--UPLAND GAME (GENERAL)

BARSKE, PHILIP. Game farms and stocking necessities. Proceedings of the 1948 Northeastern Game Conference. Pages 141-147. 1948.
A review of pheasant and quail stocking practices and environmental conditions in the Northeast--and of management by habitat improvement.

BIRDS--UPLAND GAME (GENERAL)--Continued

BIESTER, H. E. and SCHWARTE, L. H., editors. Diseases of poultry. Second edition. 1154 pages, illus. The Iowa State College Press, Ames. 1948. $10.50.

This book is the work of 33 specialists. The majority of the 40 chapters deal with a single disease or group of related diseases. There are occasional references to diseases in wild waterfowl and upland game birds.

BLOOMQUIST, WALLACE R. Upland game census 1949. North Dakota Outdoors 12(3): 10-11, illus. September 1949.

The upland game census is based mainly on returns from rural letter carriers. "Data obtained from the state-wide rural carrier survey for July, 1949, as compared with that of July, 1948, showed a slight down in pheasants, a good increase in sharptailed grouse, with the Hungarian partridge remaining about the same."--M. A. Slattery.

GREENBERG, DAVID B. Raising game birds in captivity. 224 pages, illus. D. Van Nostrand Co., Inc., New York. 1949. $6.50.

HERMAN, CARLTON M. and KRAMER, RICHARD. Control of gapeworm infection in game farm birds. California Fish and Game 36(1): 13-17, illus. January 1950.

THOMPSON, DONALD R. and BAUMANN, CARL A. Vitamin A in pheasants, quail, and muskrats. The Journal of Wildlife Management 14(1): 42-49, illus. January 1950.

"Measurements were made of the vitamin A stored in the livers of pheasants, quail and muskrats....." "Inasmuch as no casesof zero or of very low storage of vitamin A were encountered in the species studied, it seems unlikely that the populations sampled could have suffered seriously from vitamin A deficiency."

WEBBER, A. J. Less stream-bank erosion--more pheasants and quail. Soil Conservation 15(6): 136-138, illus. January 1950.

A description of stream-bank planting in southern Utah.

WESTERSKOV, KAJ. Methods for determining the age of game bird eggs. The Journal of Wildlife Management 14(1): 56-67, illus. January 1950.

"The factors in the development of an egg making age determinations possible are the weight loss due to evaporation and the accompanying growth of the air cell." These may be determined by testing the position of the egg in water, measuring weight loss, candling, and use of specific gravity.

BIRDS--UPLAND GAME (BOBWHITE & WESTERN QUAIL)

BENNETT, LOGAN. Will quail hunting get better--or worse? Outdoorsman 50(1): 5-7, illus. February 1950.
If individual hunters keep a source of quail food available and have it close to good cover they will help to maintain a shootable quail population.--M. A. Slattery.

CAMPBELL, HOWARD. A suggested method for estimating pre-hunting season status of scaled quail populations. Science 111(2871): 15. January 6, 1950.
The method is to net and examine large numbers of birds in key areas. Young and adults can be separated by the mottled primary coverts of the former.

CHAPMAN, FLOYD B. Management suggestions for quail in Ohio. The Ohio Conservation Bulletin 13(10): 31-32, illus. October 1949.
Ways of improving cover and food.

DAMON, DAVID. Winter foods of quail in Nebraska. Wildlife Management Notes 1(6): 23-26, illus. July 1949.
Corn is considered the most important winter food.

GEHRKEN, GEORGE. Facts on feeding habits of quail. Virginia Wildlife 10(12): 10-12, illus. December 1949.
An investigation made in the Virginia Piedmont and Coastal Plain in the 1948-1949 hunting season showed that the main fall and winter foods came from crop lands.

KLIMSTRA, WILLARD DAVID. Some factors influencing ecology and management of the interior bobwhite quail (Colinus virginianus mexicanus L.) on marginal lands in southeastern Iowa. Iowa State College Journal of Science 24(1): 63-65. October 1949.
This is an abstract of a doctoral thesis submitted to Iowa State College in June 1949. The author made the study in 1946-1949 on 1600 acres of land in Davis County. Quail increased locally under management but there was no general population increase.

McDOWELL, ROBERT D. Bobwhite arithmetic. Pennsylvania Game News 20(6): 9-10, illus. September 1949.
In September 1948, nearly 5000 pen-reared birds were released on 23,000 acres of land in Crawford and Mercer Counties, Pennsylvania. These birds were bred for physical fitness and disease resistance. Approximately 45% survived the winter. Mild weather probably was the main reason; but improved methods of breeding and rearing may have had some influence.

BIRDS--UPLAND GAME (BOBWHITE & WESTERN QUAIL)--Continued

MOGGRIDGE, JACK. Water--and the Gambel quail. Arizona Wildlife Conservation 1(3):5,7, illus. Spring 1948.
Permanent water is the major limiting factor for Gambel quail. The author describes water development projects of 3 types: rain water catchments, drilling of wells, and erection of windmills over existing water supply. Each involves storage.

SCHULTZ, VINCENT. A tabluation of Ohio bobwhite quail foods. The Ohio Journal of Science 49(6): 247-250. November 1949.
These tables report the analysis of 70 quail crops, collected in various Ohio counties during the winter of 1946-47. Table 1 contains data obtained from 46 quail that were shot, and Table 2 from 24 that were trapped.--M. A. Slattery.

SCHWARTZ, CHARLES W. and SCHWARTZ, ELIZABETH REEDER. The California quail in Hawaii. The Auk 67(1): 1-38, illus. January 1950.
California quail were intorduced to Hawaii before 1855 and some of the original plantings became established. In 1946 and 1947 they occupied 1800 square miles on the major islands. They ranged up to an altitude of 11,000 feet on grazing lands or lands without economic use. There was an estimated population of 78,000, with densities as high as 600 birds to the square mile. Food consisted largely of seeds and browse. There was little predation. One series of maps shows distribution and density of quail on the individual islands; another shows vegetation zones and land use.

SPAULDING, EDWARD S. The quails. 123 pages, illus. The Macmillan Company, New York. 1949. $6.50.
An attractive book, written for sportsmen. It includes accounts of the natural history and hunting of each of the 7 species that occur in the United States. All but the masked bobwhite are illustrated by full-page color plates by Jaques. In a chapter on transplanting and restocking, in one of random observations, and elsewhere in the book are reflections that concern everyone interested in upland game birds.

WAGNER, FRED H. Notes on winter feeding habits of North Texas bobwhites. Field & Laboratory 17(3): 90-98, illus. June 1949.
The author analyses the contents of 68 crops: 1 group from the Rolling Red Plains, 2 from the Western Cross-Timbers, and 4 from the East Texas Timber Belt.

BIRDS--UPLAND GAME (PHEASANT)

HUNTER, RUSSELL P. Permit-required regulated hunting areas in Connecticut. Proceedings of the 1948 Northeastern Game Conference. Pages 101-107. 1948.
A description and evaluation of this (mostly pheasant) hunting program.

BIRDS--UPLAND GAME (PHEASANT)--Continued

JONES, GARDINER F. Observations of color-dyed pheasants. The Journal of Wildlife Management 14(1): 81-82. January 1950.

In the spring of 1948 at Pullman, Washington the author used Wadkins' technique for dyeing pheasants. Cocks dyed red with Rhodamine B-extra could be identified 3 months later on the ground. All of the dyes were easy to see on the hens. There seemed to be no difference in behavior between dyed and undyed birds.

MacMULLAN, R. A. Pheasant censuses. Michigan Conservation 18(5): 8-10, illus. September-October 1949.

Rural mail carriers have been counting pheasants during a given two-week period in spring, summer, and winter since 1946. Although the counts have their limitations the information is valuable and will help biologists to solve some of the mysteries of pheasant populations.--M. A. Slattery.

MOHLER, LEVI L. Foods of the pheasant in Nebraska. Wildlife Management Notes 1(7): 27-30, illus. July 1949.

The most important winter food is corn. "Pheasants usually winter well where good woody cover is found adjacent to cornfields."

MOHLER, LEVI L. Nebraska's pheasant inventory: No. 1 and No. 2. Wildlife Management Notes 1(2,3): 7-14, illus. December 1948.

This work began in 1941. Five methods have been used and are described: roadside count, records from farmers and ranchers, sight records, rural mail carrier records, and spring crowing counts. "Several of them, expecially if used in combination with each other, appear to be quite satisfactory for pheasant management purposes under present conditions in Nebraska."

POST, GEORGE. Two new insecticides. Wyoming Wild Life 13(4): 8-13, 37-38, illus. May 1949.

Large-scale grasshopper control with Toxaphene or Chlordane was to be undertaken in Wyoming in 1949. The Wyoming Game Department studied the possibility of game birds receiving lethal amounts. It found the chukar expecially susceptible to Toxaphene, the pheasant much less susceptible. The poison is cumulative. Adult birds are not likely to take enough to kill them; but a general reduction in the supply of food may affect game birds.

WIGHT, HOWARD M. Nesting loss--the pheasant bottleneck. Pennsylvania Game News 20(12): 10-11, 25, 28, illus. March 1950.

In 1949 the author studied 77 pheasant nests on a 2500-acre tract in Lehigh County. 63 of these were in hay fields. 13 nests hatched, 64 were destroyed. Haying destroyed 47 of the 64. Since more than two-thirds of the hayfield nests were within 100 feet of the edges of the fields, the author recommends paying farmers to leave border strips uncut during the nesting period.

BIRDS--UPLAND GAME (GROUSE, ETC.)
(See also BIRDS--UPLAND GAME (PHEASANT), Post)

AMMANN, G. A. Grouse prospects. Michigan Conservation 18(5): 14-19, illus. September-October 1949.
The outlook for the grouse population during the next 2 or 3 years is extremely good. Grouse are on the increase and hunters may look forward to several seasons of plentiful supply.--M. A. Slattery.

DALRYMPLE, BYRON W. Operation snow grouse. Sports Afield 123(1): 28-29, 65-68, illus. January 1950.
An account of the trapping and transfer of 83 willow ptarmigan from northern Saskatchewan to the upper peninsula of Michigan in the winter of 1948-49.

JANSON, REUEL. Grouse cycles. South Dakota Conservation Digest 15(5): 10,12-13,16, illus. May 1948.
An analysis of grouse fluctuations in South Dakota since 1915.

JONES, ROBERT L. and TRIPPENSEE, R. E. Sex ratios and age classes of ruffed grouse in Massachusetts as indicated by wing and tail samples. Proceedings of the 1948 Northeastern Game Conference. Pages 19-29, illus. 1948.
This study is based on 259 samples received during the 1947 hunting season. Continued annual studies will be useful in determining sex ratios, age ratios, and the cyclic swing. They also will have public relations value.

PATTERSON, ROBERT L. and CRAM, DELBERT. Sage grouse--in the West. Wyoming Wild Life 13(10): 10-13, 37-38, illus. November 1949.
"Within the space of comparatively few years the sage grouse has descended from a position of leadership as a game bird in certain western states....." The authors discuss populations, seasons, management research, and game department attitudes in several states.

BIRDS--UPLAND GAME (WILD TURKEY)

HORNKOHL, LEON W. Turkey management on the national forests of Missouri. Proceedings, Society of American Foresters' Meeting, December 17-20, 1947. Pages 205-210. 1948.
"Fire protection, management of grazing, and management of the timber as provided by the Forest Service, are probably consistent with restoration of the wild turkey in the forests of Missouri. More intensive management of the timber stands would probably hasten the process."

BIRDS--UPLAND GAME (WILD TURKEY)--Continued

WALKER, EUGENE A. A study of factors influencing wild turkey populations in the central mineral region of Texas. 28 pages, illus. Texas Game, Fish and Oyster Commission, FA Report Series No. 4. August 1949.

Over-grazing and large-scale clearing are detrimental to turkeys in this region. Predation contributes to the present low population level. Supplemental feeding may be beneficial.

BIRDS--UPLAND GAME (DOVES)

DALRYMPLE, BYRON W. Doves and dove shooting. 243 pages, illus. G. P. Putnam's Sons, New York. 1949. $4.50.

The author mingles hunting experiences with information on dove behavior and biology. There are chapters on the passenger pigeon, band-tailed pigeon, and white-winged dove. Several chapters on the mourning dove include one on its management.

BIRDS--HAWKS & OWLS

BROLEY, CHARLES L. The plight of the Florida bald eagle. Audubon Magazine 52(1):42-49, illus. January-February 1950.

Since 1939 the author has had more than 100 eagle's nests under observation each year. Their nesting success has been much poorer since 1946 than before. Nesting sites are being destroyed at a rapid rate and many eagles are being killed. (Of 1000 eagles banded by the author there have been 90 returns. More than 80 of these birds were killed by irresponsible people.).

HOSKING, ERIC J. and NEWBERRY, CYRIL W. Birds of the night. 128 pages, illus. Collin's, Fourteen St. James's Place, London. 1945. 12 shillings, 6 pence.

More than 80 beautiful, large photos by the authors are accompanied by life history notes based on their picture-taking experiences. 3 of the 5 species described occur in North America as well as Great Britain (barn owl, long-eared owl, short-eared owl). The others are the little owl and the tawny owl.

JONES, J. KNOX, JR. Notes on the small mammal content of pellets of the barn owl (Tyto alba pratincola) in Nebraska. The Nebraska Bird Review 17: 4-5. 1949.

During the past several years the author examined pellets from 3 counties; Wayne (146 pellets), Red Willow (59 pellets), and Sioux (17 pellets). He identified the remains of 11 species of small mammals. Meadow mice occurred in all of the pellets from Sioux County and in about half of those from Wayne and Red Willow Counties. White-footed mice occurred in four-fifths of the pellets from Wayne County, less than half of those from Red Willow County, and less than one-fourth of those from Sioux County. Harvest mice occurred in nearly two-thirds of the pellets from Red Willow County and more than half of those from Wayne County. Kansas pocket mice occurred in nearly half of the pellets from Red Willow County.

BIRDS--HAWKS & OWLS--Continued

SCHIFFERLI, A. Schwankungen des Schleiereulenbestandes Tyto alba (Scopoli) [Fluctuations in the population of barn owls in Switzerland]. Der Ornithologische Beobachter 46(3): 61-75. 1949. (Copied from Bird-Banding for January 1950, page 25).

A review by Donald S. Farner says, in part: "Although this paper is based on limited data, it is nevertheless of real fundamental importance in giving an insight into the dynamics of an owl population, the first substantial attempt in this direction." "The author suggests that increased rodent populations are accompanied by increased Barn Owl production and that the characteristic decline in rodent populations after having reached a maximum results in decimation of the Owl populations."

WALLACE, GEORGE J. The barn owl in Michigan: its distribution, natural history, and food habits. 61 pages, illus. Michigan Agricultural Experiment Station, Technical Bulletin 208. August 1948.

"This investigation, concerned mainly with the food habits of East Lansing barn owls over a 3-year period covering both the high and low phases of a Microtus cycle, involved the examination of about 2,200 pellets (calculated) and the identification of 6,815 prey animals." Most Michigan records are from the southern 4 tiers of counties. Banding records show that some barn owls travel long distances. They breed at all seasons. The principal food throughout this study was Microtus. There were no traces of poultry or game birds.

BIRDS--SONGBIRDS

HEADSTROM, RICHARD. Bird's nests, a field guide. 128 pages, illus. Ives Washburn, Inc., New York. 1949. $2.75.

The organization of this key to the nests of birds of eastern United States is clearly shown in the table of contents. The first separation is according to whether nests are on the ground or above it; next according to habitat (if on the ground) or according to materials or special location (if above the ground); and finally according to whether they are open, arched, in colonies, size, type of vegetation to which they are attached, etc. The description of each nest includes its special characteristics and the geographic range of the species. More than 60 large photos have page references to descriptions.

MASON, C. RUSSELL and REED, PARKER C. Provide your birds a nesting place. The Bulletin of the Massachusetts Audubon Society 34(1): 3-19, illus. February 1940.

Following an introduction that discusses the significance of nesting boxes and gives detailed instructions for building and directions for placing them, are working drawings for 7 different kinds of boxes. Birds considered are bluebird, tree swallow, house wren, Carolina wren, crested flycatcher, purple martin, chickadee, nuthatches, titmouse, downy woodpecker, hairy woodpecker, red-headed woodpecker, flicker, prothonotary warbler, saw-whet owl, screech owl, wood duck, hooded merganser, golden-eye, and sparrow hawk. Brackets, platforms, or cleats may be used to encourage the nesting of robin, phoebe, barn owl, osprey, barn swallow, and cliff swallow.

BIRDS--SONGBIRDS--Continued

SNYDER, DANA PAUL. Bird communities in the coniferous forest biome. The Condor 52(1): 17-27, illus. January-February 1950.

During the summer of 1947 the author censused the breeding birds in 3 coniferous forest communities in the Colorado Rockies. The commonest species were mountain chickadee, ruby-crowned kinglet, hermit thrush, pine siskin, and gray-headed junco. Density was slightly more than 100 pairs per 100 acres in the Douglas fir-ponderosa pine community; less in Engelmann spruce-subalpine fir; still less in lodgepole pine.

WANDELL, WILLET N. Songbird use of wildlife habitat improvement plantings. Illinois Wildlife 3(2): 4-7, illus. March 1948.

Habitat improvement plantings in Urbana Township, Illinois in 1947 had an average of 105 pairs of songbirds per mile of cover. Mature osage orange hedge had only half as many. On an acreage basis, fence row and stream bank improvements had more than 3 times as many pairs of songbirds ad did block plantings.

WILLIAMS, GEORGE G. Weather and spring migration. The Auk 67(1): 52-65, illus. January 1950.

The author discusses height of migration, landing at night, tail winds, strong winds, temperature, reverse migration, and air-masses. He concludes that "Birds flying at night may become pawns of the weather. They may advance, retreat, or veer off at an angle from the direct course; they may be borne far offcourse by moving air-masses catching them aloft on dark nights; they may flee for hundreds of miles before an advancing cold front, and they may reach, or be borne to, unaccustomed places before dawn comes and they can see how to land, or are safe from inclement weather."

REPTILES & AMPHIBIANS

ALLEN, E. ROSS and NEILL, WILFRED T. Increasing abundance of the alligator in the eastern portion of its range. Herpetologica 5(6): 109-112. December 1949.

Personal observations and records of Florida hide dealers show that alligators in the Southeast rapidly became rarer from 1929 to 1943. The low came in 1943, when only 6800 hides were marketed. Since 1944 Florida alligators have been protected during the breeding season, and individuals under 4 feet could not be taken legally. There has been a striking increase. 25,000 hides were taken in 1947 and alligators were seen everywhere. The situation in Georgia is similar. The larger alligators are becoming bolder. One attack on a swimmer is reported. Old males often kill younger ones. "It might prove a desirable conservation measure, in some areas, to permit the killing or capture of large specimens, since 5-foot specimens are good breeders." Experiments proved that it is not economically feasible to breed alligators in captivity. The crocodile, unlike the alligator, has not responded well to protection, but is believed to be maintaining its population.--W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

CAGLE, FRED R. The life history of the slider turtle, Pseudemys scripta troostii (Holbrook). Ecological Monographs 20(1): 31-54, illus. January 1950.

This monograph is based on extensive studies, principally in Illinois and Louisiana, from 1937 to the present. Subjects discussed include: range, collecting, marking, habitat, courtship, reproductive potential, eggs, nests, incubation, young, attainment of sexual maturity, activity cycle, growth, hibernation, aestivation, longevity, foods, enemies, populations, and travels. The paper probably represents the most comprehensive life history study ever made on a species of turtle.--W. H. Stickel.

CLARK, ROBERT FOSTER. Snakes of the hill parishes of Louisiana. Journal of the Tennessee Academy of Science 24(4): 244-261. October 1949.

"This account deals with 28 species and subspecies, and a total of 2,083 captured specimens. Untold numbers of other specimens were observed but not captured." The study was made in 1926 and 1927.

CURTIS, LAWRENCE. A key to the snakes of Dallas County, Texas. Field & Laboratory 17(4): 146-150, illus. October 1949.

29 species and subspecies.

CURTIS, LAWRENCE. The snakes of Dallas County, Texas. Field & Laboratory 17(1): 5-13, illus. January 1949.

Abundance and distribution of 29 kinds--all but 1 observed by the author since 1945.

DARGAN, LUCAS M. and STICKEL, WILLIAM H. An experiment with snake trapping. Copeia 1949 (4): 264-268, illus. December 1949.

The traps used were wire mesh funnel traps with 25-foot drift fences extending from each end. Such traps were non-selective. They act as wholesale slow death traps for game and many other kinds of animals if not carefully tended. 16 traps, spaced 330 feet apart on a grid, were set in a pine-oak woods at the Patuxent Research Refuge, Md., in 1946 and 1947. 67 snakes of 5 species were caught (about 1 snake per 93 trap days). Behavior of snakes in relation to the traps is discussed. Suggestions are made as to size of area and trap spacing necessary for population studies.--W. H. Stickel.

GORDON, ROBERT E. and SMITH, RICHARD L. Notes on the life history of the salamander Aneides aeneus. Copeia 1949 (3): 173-175. September 1949.

A. aeneus in the region of Highlands, N. C. lives in the crevices of moist, shaded cliffs during the breeding season. Clutches of eggs are suspended from the roofs of crevices and each is guarded by a female. Eggs average 19 per clutch. The eggs are described, and lengths of adults are given.--W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

GRIZZELL. ROY A., JR. The hibernation site of three snakes and a salamander. Copeia 1949 (3): 231-232. September 1949.

Carphophis, Haldea, Diadophis, and Plethodon were found hibernating in central Maryland at depths of 24-35 inches. They were active when found, though soil temperature was 9.5° C. They were not in any visible chambers or channels.--W. H. Stickel.

HENSLEY, M. MAX. Mammal diet of Heloderma. Herpetologica 5(6): 152. December 1949.

Twp specimens of Heloderma suspectum regurgitated cottontail rabbits when captured. A captive specimen ate a house mouse.--W. H. Stickel.

HERALD, EARL S. Effects of DDT-oil solutions upon amphibians and reptiles. Herpetologica 5(6): 117-120.

Reptiles and amphibians may be killed by direct effect of DDT or by eating DDT poisoned animals. The symptoms of DDT poisoning are described for frogs and toads, snakes, and turtles. Aerial distribution of 0.3 and 0.6 lbs. per acre of DDT over 4 ponds near Orlando, Florida, caused the death of many frogs, several snakes, and a few turtles. Dosages used in mosquito control are usually lighter than this. Actual ground disposition of 0.0004 lbs. per acre of DDT was sufficient to kill a series of Bufo terrestris.--W. H. Stickel.

HERRE, ALBERT W. C. T. and RABOR, D. S. Notes on Philippine sea snakes of the genus Laticauda. Copeia 1949 (4): 282-284. December 1949.

Venomous sea snakes breed by thousands in rocky, creviced shores of tiny islands in the Philippines. Prior to the war the Japanese operated a sea snake fishery in these islands. Snakes were taken alive and later used for human food and for leather. 20,000 to 30,000 were collected in a single year at one islet. It is believed that this islet would have a sustained yield of 10,000 skins per year if individuals less than 1 meter long were spared. The heavy-bodied L. semifasciata is the most important leather producer; but even slender species are caught and their skins used for trim and small objects.--W. H. Stickel.

JAMESON, DAVID L. and FLURY, ALVIN G. The reptiles and amphibians of the Sierra Vieja Range of southwestern Texas. The Texas Journal of Science 1(2): 54-79, illus. June 1949.

The authors studied the ecological distribution of 11 species of amphibians and 42 species of reptiles in June and July 1948. Their definition of biotic districts, life belts, and associations in similar to that used by Blair and Miller in their report on the mammals (see page 16).

KLIMSTRA, W. D. Early bullfrog transformation. Copeia 1949 (3): 231. September 1949.

Rana catesbeiana tadpoles in newly constructed farm ponds in southeastern Iowa transformed after one winter rather than the usual two.-- W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

LINER, ERNEST A. Notes on the young of the blue racer, Coluber constrictor flaviventris. Copeia 1949 (3): 230. September 1949.
Newly hatched racers were nervous and aggressive but soon became gentler in captivity. They refused various insects and small frogs, but eagerly ate Anolis, and less readily Leiolopisma. Two instances of accidental cannibalism occurred. Dates of shedding are given.--W. H. Stickel.

NORRIS, KENNETH S. Observations on the habits of the horned lizard Phrynosoma m'callii. Copeia 1949 (3): 176-180, illus. September 1949.
This scarce desert lizard was studied in the summer of 1948 on dunes in the Coachella Valley, Calif. Concealment is gained by protective coloration or by diving under sand. Temperature control is achieved by orientation of the body in respect to sunlight and soil surface. The optimal body temperature is about 39-40° C. 4 stomachs held only ants. A female collected May 15 contained 7 eggs. The lizards are parasitized by nematodes and red mites.--W. H. Stickel.

PARKER, MALCOLM V. Notes on the herpetology of Clay and Green Counties, Arkansas. Proceedings of the Arkansas Academy of Science 2: 15-30. 1947.
The author gives distribution in these 2 north-eastern Arkansas counties of 22 species of amphibians and 38 species and subspecies of reptiles.

PETERSON, RANDOLPH L. Amphibians and reptiles of Brazos County, Texas. The American Midland Naturalist 43(1): 157-164. January 1950.
18 kinds of amphibians and 42 kinds of reptiles are recorded from this southeastern Texas County.

RAMSEY, L. W. Hibernation, and the effect of a flood on Holbrookia texana. Herpetologica 5(6): 125-126. December 1949.
Holbrookia texana, Cnemidophorus gularis, and Sceloporus olivaceus living in gravelly and rocky spots along a river near Fort Worth, Texas were studied for 1½ years. Hibernation sites are described. Hibernation under 3 inches of loose shale protected one individual through a temperature of 0° F. Unusually severe and prolonged spring floods almost eliminated lizards from the area.--W. H. Stickel.

WERLER, JOHN E. The poisonous snakes of Texas and the first aid treatment of their bites. Texas Game and Fish 8(3): 25-41, illus. February 1950.
Protective measures against snakes are discussed. Experiments revealed that a snake-excluding fence of ¼-inch mesh 3 feet high served excellently when slanted outward at a 30° angle. First aid treatment for bites is described and illustrated. There is a good photograph of each species and subspecies of venomous snake in Texas. Discussion of each form includes description, size, number of young, local distribution, and habitat notes. Maps show the Texas distribution by counties of each form--a feature of much interest to herpetologists.--W. H. Stickel.

REPTILES & AMPHIBIANS--Continued

WILSON, L. WAYNE and FRIDDLE, SAUFLEY B. The herpetology of Hardy County, West Virginia. The American Midland Naturalist 43(1): 165-172. January 1950.
The authors discuss the distribution of 48 kinds of amphibians and reptiles, on the basis of observations and collections made from 1938 to 1947.

WOOD, JOHN THORNTON. Observations on Natrix septemvittata (Say) in southwestern Ohio. The American Midland Naturalist 42(3): 744-750. November 1949.
The author observed the queen snake on many field trips from 1940 to 1947. He describes habitat, habits, aggregations, food preferences, feeding, enemies, and reproduction.

ZWEIFEL, RICHARD G. Comparison of food habits of Ensatina eschscholtzii and Aneides lugubris. Copeia 1949 (4): 285-287, illus. December 1949.
A comparison of the stomach contents of 45 Ensatina and 13 Aneides collected in the same canyon habitat in California revealed that the salamanders were competing for the same types of arthropods. Relative numbers of the 2 salamanders suggest that Ensatina is dominant in this competition; but it is also possible that other environmental factors affect their numbers. Application of Lack's rule is discussed.--H. H. Stickel.

FISHES

BIGELOW, HENRY B.; FARFANTE, ISABEL PERÉZ; and SCHROEDER, WILLIAM C. Fishes of the western North Atlantic. Part one. Lancelets. Cyclostomes. Sharks. 576 pages, illus. Sears Foundation for Marine Research, Yale University, New Haven, Conn. 1948. $10.00.
A review by Carl L. Hubbs may be found on pages 155-157 of Copeia for June 1949.

CARL, G. CLIFFORD and CLEMENS, W. A. The fresh-water fishes of British Columbia. 132 pages, illus. British Columbia Provincial Museum, Department of Education, Handbook No. 5. September 1948. 50¢.
There are at least 63 kinds of fishes in the fresh waters of British Columbia. The authors discuss their environment, structure, distribution, economic importance, and identification. The systematic section has keys, descriptions, photographs, colored plates (of 7 trout), and notes on distribution and behavior.

CLEMENS, W. A. and WILBY, G. V. Fishes of the Pacific coast of Canada. 368 pages, illus. Fisheries Research Board of Canada, Bulletin No. 68. 1946. $2.00.
A review by George A. Rounsefell on page 214 of Copeia for September 1947 says, in part: "This work contains a key to the 245 species from 77 families that are included, and each species is illustrated in black and white." "The descriptions are thorough but written in simple, understandable language, and the text itself is not cluttered with bibliographic references to synonymy, although an 8-page bibliography follows the text." "Most of the species described are found either in Alaska or on the Pacific coast of the United States....."

FISHES--Continued

CURTIS, BRIAN. The life story of the fish; his morals and manners. 284 pages, illus. Harcourt, Brace and Co., New York. 1949. $3.75.
A detailed, entertaining description of fish structure, physiology, and habits; and something of game fish and of fishermen.

EDDY, SAMUEL and SURBER, THADDEUS. Northern fishes, with special reference to the Upper Mississippi valley. Revised edition. 276 pages, illus. The University of Minnesota Press, Minneapolis. 1947. $4.00.
This book is based on a study of the fishes of Minnesota. It begins with discussions of fishing, lake dynamics and fish populations, fish management, the improvement of lakes and streams, propagation, and parasites. Then comes an account of fish structure and classification, keys, and descriptions of more than 150 species and subspecies. The descriptions are ample and interesting, and many are accompanied by photographs.

EDMINSTER, FRANK C. Fish ponds for the farm. 114 pages, illus. Charles Scribner's Sons, New York. 1947. $3.50.
In 8 chapters the author tells something of the history, value, and biology of ponds; how to locate and build them; how to take care of their surroundings; how to prepare old ponds for fish management; and how to develop and maintain good fishing.

HUBBS, CARL L. and LAGLER, KARL F. Fishes of the Great Lakes region. 186 pages, illus. Cranbrook Institute of Science, Bulletin No. 26. July 1949. $3.00.
A well written, well illustrated, compact manual. Maps and text relating to fish geography, together with information on collecting and study, get the student off to a good start. Drawings illustrate the family key. Keys, drawings, photos (including a long series near the end of the book), color plates, notes on distribution and habits, and brief descriptions that emphasize distinguishing characteristics enliven the accounts of species.

LAGLER, KARL F. Studies in freshwater fishery biology. Third, revised edition. 231 pages, illus. J. W. Edwards, Ann Arbor, Mich. 1949. $4.00.
An anonymous review on page 194 of The Progressive Fish-Culturist for July 1949 says, in part: "Dr. Lagler has prepared a clear, well-organized outline course and manual suitable for use by instructors and students in fishery biology. Because of the outline presentation, a number of the sections would probably have to be supplemented with lectures in order to be of benefit to the student. Other sections, such as those concerned with age and growth of fish, surveys of lakes and streams, and parts of the lake and stream improvements, are more fully developed and could serve as texts." "All sections of the manual offer excellent bibliographies."

FISHES--Continued

ROEDEL, PHIL M. Common marine fishes of California. 150 pages, illus. California Division of Fish and Game, Bureau of Marine Fisheries, Fish Bulletin No. 68. 1948.

This useful guide has a list of common and scientific names, glossary, key to some adult marine fish, and juxtaposed descriptions and photographs of most of the fishes treated.

SIMON, JAMES R. Wyoming fishes. 129 pages, illus. Wyoming Game and Fish Department, Bulletin No. 4. 1946. $1.00.

General notes, a discussion of fish management in Wyoming, a description of Wyoming's physiography and hydrography, and notes on identification are followed by accounts of 70 kinds of fish (with keys, descriptions, and photos).

TARZWELL, CLARENCE M. Effects of DDT mosquito larviciding on wildlife. V. Effects on fishes of the routine manual and airplane application of DDT and other mosquito larvicides. Public Health Reports 65(8): 231-255, illus. February 24, 1950.

INVERTEBRATES (GENERAL)

MacGINITIE, G. E. and MacGINITIE, NETTIE. Natural history of marine animals. 473 pages, illus. McGraw-Hill Book Co., Inc., New York. 1949. $6.00.

The authors discuss food, the relations of animals to their physical environment and to each other, sense organs, luminescence, habitats, growth rates, burrowing, variation and succession, and other subjects; then describe each major group of animals, using as examples the species most frequently encountered and those with the most interesting habits.

MOLLUSKS

HANNA, G. D. and STRONG, A. M. West American mollusks of the genus Conus. Proceedings of the Californis Academy of Sciences, Fourth Series 26(9): 247-322, illus. January 1949.

There are a key, notes on taxonomy and distribution, and many clear photos.

INGLE, ROBERT M. and SMITH, F. G. WALTON. Oyster culture in Florida. 22 pages, illus. State of Florida, Board of Conservation, Educational Series No. 5. March 1949.

a review of oyster biology, the oyster industry, and oyster cultivation.

JONES, RICHARD O. Propagation of fresh-water mussels. The Progressive Fish-Culturist 12(1): 13-25, illus. January 1950.

The author discusses life history, former methods of propagation, and a modified artificial infection method.

MOLLUSKS--Continued

PALMER, E. LAURENCE. Some common shell-bearers and their kin. Cornell Rural School Leaflet 42(4): 3-32, illus. Spring 1948-49.

Clear accounts of the life of a land snail, a pond snail, and a fresh-water mussel; of mollusk behavior; mollusks as food; and the relation of mollusks to agriculture, human health, wildlife, and industry. Photographs, drawings, lists of references, and descriptions of common species help make this an attractive introduction to this important group of animals.

SMITH, ALLYN G. and GORDON, MACKENZIE, JR. The marine mollusks and brachiopods of Monterey Bay, California, and vicinity. Proceedings of the California Academy of Sciences, Fourth Series 26(8): 147-245, illus. December 1948.

The authors include discussions of collecting, physiographic features and mollusk faunas, commercial use of mollusks, and shellfish poisoning in their introduction to a checklist of 732 species and subspecies. They describe several new kinds.

SMITH, R. O. Summary of oyster farming experiments. 20 pages, illus. U. S. D. I, Fish and Wildlife Service, Special Scientific Report 63. April 1949.

Result of these experiments provide ".....a sound basis for future development of the oyster industry in South Carolina and Georgia."

INSECTS

BATES, MARSTON. The natural history of mosquitoes. 379 pages, illus. The Macmillan Co., New York. 1949. $5.00.

This book contains a wealth of coordinated information on mosquito physiology and ecology. Chapters on "The Biological Environment of the Larva", "The Classification of Larval Habitats", "Mosquitoes in Relation to Other Organisms", "Mosquitoes as Vectors of Viruses", and Mosquitoes as Vectors of Plasmodia" are of particular interest to wildlife biologists.

CHU, H. F. How to know the immature insects; an illustrated key for identifying the orders and families of many of the immature insects with suggestions for collecting, rearing and studying them. 234 pages, illus. Wm. C. Brown Co., Dubuque, Iowa. 1949. $3.15.

ARACHNIDS

GERTSCH, WILLIS J. American spiders. 285 pages, illus. D. Van Nostrand Co., Inc., New York. 1949. $6.95.

A review by Harley J. Van Cleave on page 767 of The American Midland Naturalist for November 1949 says, in part: "From a competent background of knowledge and understanding of the entire group of arthropods, the writer throughout the book has woven a most fascinating web of explanations of relations of habits, structure and development of spiders in comparison with some of their better known relatives." "The illustrations have highest scientific and artistic values. Excellent photographs [many in color] from living specimens, most of them in natural surroundings, have replaced the customary drawings,....."

VEGETATION (GENERAL)--COMMUNITIES & HABITATS
(See also VEGETATION (GENERAL)--FLORAS & MANUALS, Schuster)

EGLER, FRANK E. Regional vegetation literature. I. Connecticut. Phytologia 3(1): 1-26, illus. September 1948.

This is the first of a series of annotated bibliographies intended to be guides ".....to studies of plant communities and of the mosaics of plant communities which constitute vegetation." "The arrangement of materials for each state includes the following sections: (1) a map of the state, showing localities at which vegetation has been described; (2) botanical bibliographies, if existing; (3) state floras for lichens, bryophytes, pteridophytes, and spermatophytes; (4) local vegetation literature, arranged by localities; and (5) local vegetation literature, arranged by authors, in simplified form, with cross-references to the previous section." There are about 125 references on the vegetation of Connecticut.

EGLER, FRANK E. Regional vegetation literature. II. Rhode Island. Phytologia 3(2): 49-56, illus. March 1949.

This annotated bibliography contains about 40 references.

MUNZ, PHILIP A. and KECK, DAVID D. California plant communities. El Aliso 2(1): 87-105, illus. April 27, 1949.

The classification presented ".....defines twenty-four communities within the fourteen vegetation types and five biotic provinces....." and gives for each of the 24 communities ".....a list of characteristic species, a statement as to distribution and type of area covered, pertinent climatic data, and a brief word as to the general appearance of the vegetation."

TANSLEY, A. G. Britain's green mantle, past, present and future. 294 pages, illus. George Allen & Unwin, Ltd., London. 1949.

A vivid description of Britain's vegetation since prehistoric times. A chapter dealing with the human and animal factors in semi-natural vegetation discusses the effects of coppicing and replanting forests; the effects of pasturing and fertilizing grasslands; and the effects of rabbits, hares, mice, voles, deer, and some birds. Other chapters describe the physical environment and the plant communities. There is much that is applicable to studies in North America. This is particularly true of grassland, freshwater, marsh, and maritime communities.

VEGETATION (GENERAL)--COMMUNITIES & HABITATS--Continued

YORK, CHRISTOPHER L. The physical and vegetational basis for animal distribution in the Sierra Vieja Range of southwestern Texas. The Texas Journal of Science 1(3): 46-62, illus. September 1949.
The author describes the physiography, geology, soils, and plant associations.

VEGETATION (GENERAL)--FLORAS & MANUALS

ANONYMOUS. Native trees of Canada. Fourth edition. 293 pages, illus. Canada Dept. of Mines and Resources, Mines, Forests, and Scientific Services Branch, Dominion Forest Service, Bulletin 61. 1949. $1.50.
"In the 1949 edition the method of presentation has been completely modernized, with new range maps and photographic illustrations replacing the former drawings. The species have been treated uniformly, the left-hand page containing text and range maps and the facing page illustrations of botanical features." This is an attractive and useful book.

BAILEY, L. H. Manual of cultivated plants most commonly grown in the continental United States and Canada. Revised edition. 1116 pages, illus. The Macmillan Co., New York. 1949. $17.50.
The original edition, published in 1924, contained 3665 species. This edition contains 5347 species. There are keys, descriptions, and nearly 200 figures. Each figure includes a sufficiently large number of saparate drawings to show variability in habit, foliage, flowers, and fruit within a family.

BROWN, CLAIR A. Louisiana trees and shrubs. 262 pages, illus. Louisiana Forestry Commission, Bulletin No. 1. August 1945.
This useful manual has brief descriptions of the species, information on their range and habitat, economic notes, and many photographs. There are no keys.

CORRELL, DONOVAN S. A preliminary survey of the distribution of Texas Pteridophyta. Wrightia 1(5): 247-278, illus. May 1949.
The author gives the occurrence of each species in the 7 major plant zones of the State.

EASTHAM, J. W. Supplement to 'Flora of Southern British Columbia' (J. K. Henry): comprising descriptions of additional species and varieties, significant extensions of range, and corrections. 119 pages. British Columbia Provincial Museum, Special Publication No. 1. 1947.
Henry's flora was published in 1915.

HIGGINS, ETHEL BAILEY. Annotated distributional list of the ferns and flowering plants of San Diego County, California. 174 pages, illus. San Diego Society of Natural History, Occasional Papers No. 8. November 1949.

VEGETATION (GENERAL)--FLORAS & MANUALS—Continued

HOWELL, JOHN THOMAS. Marin flora; manual of the flowering plants and ferns of Marin County, California. 323 pages, illus. University of California Press, Berkeley. 1949. $4.50.
The introduction to the flora of this area just north of San Francisco comprises two dozen beautiful full-page photos and 30 pages of information on physiography, geology, soils, climate, plant communities, the effect of fire, geographic relations of the flora, endemic plants, naturalized plants, and plant explorers. The systematic account, with its keys and notes on distribution and special characteristics, is made attractive and useful by well-chosen variations in type.

OGDEN, EDITH BOLAN. The ferns of Maine. 128 pages, illus. University of Maine Studies, Second Series, No. 62. 1948. $1.00.
A complete manual, with keys, descriptions, detailed notes on distribution, drawings, glossary, and bibliography.

ROULEAU, ERNEST. Enumeratio plantarum vascularum Terrae-Novae. Contributions de l'Institut Botanique de l'Université de Montréal No. 64. Pages 61-83. March 1949. 50¢ for No. 64.
A list (without annotations) of the vascular plants of Newfoundland, Saint-Pierre, and Miquelon, based on specimens at the Gray Herbarium of Harvard University.

SCHUSTER, R. M. The ecology and distribution of Hepaticae in central and western New York. The American Midland Naturalist 42(3): 513-712, illus. November 1949.
A taxonomic treatment, with detailed keys and descriptions, statements of range and habitat, and 18 pages of drawings, occupies three-fourths of this article. The remainder describes the region, the effects of glaciation, atmospheric and edaphic factors, the forest types and their associated layer-societies of hepatics (northern coniferous forest with calciphile and calciphobe lines of succession, deciduous forest with beech-maple-hemlock and oak-hickory climaxes), and the geographic relations of the flora.

TOLSTEAD, W. L. and CORY, V. L. Notes on the flora of Taylor County, Texas. Field & Laboratory 14: 32-69, illus. 1946.
An annotated list, with a brief description of environment and plant communities.

VEGETATION—FOREST

AREND, JOHN L. and JULANDER, ODELL. Oak sites in the Arkansas Ozarks. 42 pages, illus. Arkansas Agricultural Experiment Station, Bulletin 484. December 1948.
The authors describe 4 types (white oak, white-black-northern red oak, black oak-hickory, and post oak-blackjack oak) and their associated ground cover.

VEGETATION---FOREST---Continued

DUERR, WILLIAM A. Forest statistics for western and central Tennessee. 27 pages, illus. Southern Forest Experiment Station, Forest Survey Release 63. December 1949.

40% of this 15-million-acre region is forest land. A 11-county area east of the Tennessee River is more than 60% forested. Hardwoods are dominant throughout, but there is a great deal of cedar in central Tennessee. There is a brief description of 5 forest types. Data are based on the study of aerial photos and the field examination of plots.

HAWLEY, RALPH C. and STICKEL, PAUL W. Forest protection. Second edition. 355 pages. John Wiley and Sons, Inc., New York. 1948. $4.50.

Protection of forests is covered under the subjects of forest fires, injurious plants, insects, domestic animals, wildlife (deer, beaver, porcupines, rabbits, squirrels, mice, birds), and atmospheric agencies.--N. W. Hosley.

McCORMACK, J. F. Forest resources of central Florida, 1949. 36 pages, illus. Southeastern Forest Experiment Station, Forest Survey Release No. 31. November 1, 1949.

This survey covers 20 counties. About 3/5 of the total area is forested. 55% of the commercial forest is in saw-timber stands. Since 1936 the area of commercial pine has decreased 25% and the area of hardwood types has more than doubled. There is a brief description of 10 forest types (longleaf pine, slash pine, loblolly pine, pond pine, sand pine, cypress, lowland hardwoods, upland hardwoods, scrub oak, palms). Data are based on the study of aerial photos and the field examination of plots.

McCORMACK, J. F. Forest resources of northwest Florida, 1949. 36 pages, illus. Southeastern Forest Experiment Station, Forest Survey Release No. 32. January 1950.

This report covers 16 counties. 83% of the total land area is forested. Pine types occupy more than two-thirds of the commercial forest land area. Since 1934 pine types have decreased 9% and hardwood types have increased 33%. Only 14% of the commercial forest land is in saw timber. There is a brief description of 10 forest types. Data are based on the study of aerial photos and the field examination of plots.

SANDBERG, LYNN; HORN, ARTHUR G.; and GUILKEY, PAUL C. The forest resource of Clearwater County. 59 pages, illus. Office of Iron Range Resources and Rehabilitation, State Office Bldg., St. Paul 1, Minn. 1950?

The economy of the County is basically agricultural, but ".....production of rough forest products is an important element in the income of many of the county's residents." There are descriptions of 13 cover types. Aspen is the principal one, and it is generally undercut. Jack pine is next, and it is badly overcut. Most of the other conifers are being overcut. Brush covers 30% of the commercial forest area.

VEGETATION--FOREST--Continued

TOUMEY, JAMES W. and KORSTIAN, CLARENCE F. Foundations of silviculture upon an ecological basis. Second edition, revised. 468 pages, illus. John Wiley and Sons, Inc., New York. 1947. $5.00.

This forestry textbook covers the science of tree growing from the standpoints of the effect on the environment on the tree and of the trees on the environment. Chapter subjects include solar radiation; air temperature; atmospheric moisture; climate; soil conditions; soil moisture; physiography; biotic factors; interaction of site factors; reactions of forest vegetation on its physical environment; effects of forests on animals; the tree; development, reproduction, growth and yield of stands; tolerance; vegetational classification; and forest succession.--N. W. Hosley.

TRIMBLE, G. R., JR. and TRIPP, NORMAN R. Some effects of fire and cutting on forest soils in the lodgepole pine forests of the northern Rocky Mountains. Journal of Forestry 47(8): 640-642. August 1949.

Most lodgepole pine forests originated following fires. After a heavy fire the bare soil soon becomes much more impervious to water, and sheet erosion starts, even on gentle slopes. When a burn is fully restocked, following fire, 30 to 40 years are required before any appreciable litter and humus begin to form. The effects of cuttings are generally similar to those from fire.--N. W. Hosley.

WAHLENBERG, W. G. Forest succession in the southern piedmont region. Journal of Forestry 47(9): 713-715, illus. September 1949.

This report presents results from 21 counties selected at random in South Carolina, Georgia, and Alabama. A diagram shows the natural successional trends and the influences of cuttings.--N. W. Hosley.

VEGETATION--BRUSHLAND

ALLRED, B. W. Distribution and control of several woody plants in Texas and Oklahoma. Journal of Range Management 2(1): 17-29, illus. January 1949.

Since this region was first settled, undesirable woody plants (mesquite, juniper, live oak, huisache, creosote bush, and others) have invaded millions of acres of range lands in Texas and Oklahoma. Their elimination by dozers, bush cutters, etc. must be followed by reestablishing a cover of competitive grasses and forbs through seeding and managed grazing. Maintenance involves brush control by mechanical and chemical methods and continued managed grazing.

COOK, CLYDE J.; COOK, C. WAYNE; and HARRIS, LORIN E. Utilization of northern Utah summer range plants by sheep. Journal of Forestry 46(6): 416-425, illus. June 1948.

A small number of species made up the bulk of the sheep's diet. Leaves were eaten more than stems. Forbs were eaten most, browse next, grasses least. Sheep were more selective in lightly grazed aspen areas than in heavily grazed sagebrush areas.

VEGETATION--BRUSHLAND--Continued

ELLISON, LINCOLN. The ecological basis for judging condition and trend on mountain range land. Journal of Forestry 47(10): 786-795, illus. October 1949.

Primary succession is too slow to be manipulated by land management. Secondary successions resulting from disturbances are more rapid and can be handled so as to produce results in a reasonable time. Under accelerated erosion destructive change replaces succession. The normal potential of sites can best be judged from natural, ungrazed areas. In judging range condition, soil stability is of paramount importance, while forage values are secondary.--N. W. Hosley.

PECHANEC, JOSEPH F. and STEWART, GEORGE. Grazing spring-fall sheep ranges of southern Idaho. 34 pages, illus. U. S. D. A., Circular No. 808. May 1949.

An account of plant communities containing sagebrush, other shrubs, grasses, and weeds, and how they are affected by sheep grazing.

YOUNG, VERNON A.; ANDERWALD, FRANK R.; AND McCULLY, WAYNE G. Brush problems on Texas ranges. 19 pages, illus. Texas Agricultural Experiment Station, Miscellaneous Publication 21. October 1948.

Within the past 50-75 years millions of acres of grasslands have been taken over by mesquite, oak, cedar, prickly pear, and other brush species. The authors tell how to eradicate them and restore grass.

VEGETATION--GRASSLAND

CORY, V. L. The disappearance of plant species from the range in Texas. Field & Laboratory 17(3): 99-115. June 1949.

Detailed notes on more than 30 species, describing changes associated with the use of the range of sheep, goats, cattle, and deer.

GARDNER, J. L. Effects of thirty years of protection from grazing in desert grassland. Ecology 31(1): 44-50, illus. January 1950.

A 320-acre tract south of Silver City, New Mexico has been protected from grazing since 1918. "In 1946, grass density on the upland inside the area was 110 per cent higher than that outside; there was little difference, however, in species composition between the two." "Gullies were raw and eroding outside; inside they were healing."

WOOLFOLK, E. J. Stocking northern Great Plains sheep range for sustained high production. 39 pages, illus. U. S. D. A., Circular No. 804. April 1949.

3 intensities of grazing were studied from 1936 to 1941 near Miles City, Montana. The circular describes the vegetation, the habits of the sheep, and the effects on the vegetation of different intensities of grazing.

VEGETATION--WILDLIFE PLANTS

AGER, JAMES H. Multiflora rose. Wildlife Management Notes 1(1): 1-6, illus. 1948?
"Plantings of multiflora rose can fulfill some of the requirements for survival of many of Nebraska's wildlife species." This article tells how.

ANDERSON, WALLACE L. and EDMINSTER, FRANK C. Multiflora rose--for living fences and wildlife cover. 8 pages, illus. U. S. D. A., Leaflet No. 256. 1949. 5¢ from Government Printing Office.
This leaflet tells where multiflora will grow, how to use it, and how to establish and care for it.

TAYLOR, I. T. The Mccartney rose (Rosa bracteata--Windland). The Texas Journal of Science 1(4): 54-56. December 1949.
This serious agricultural land pest has been in the South for more than a century. It has made useless 200,000 acres in Texas. It makes good wildlife cover (particularly for quail) and furnishes some food. Birds and cattle are the main agents of its spread. It is best controlled by planting rice for 2 consecutive years on infested land.

VEGETATION--AQUATIC
(See also WILDLIFE (GENERAL)--COMMUNITIES & HABITATS, Yeager)

ADDY, C. E. and JOHNSON, ROBERT H. Status of eelgrass along the Atlantic coast during 1947. Proceedings of the 1948 Northeastern Game Conference. Pages 73-78. 1948.
There has been a steady increase all along the coast, much as in 1946.

BALCOM, ROBERT B. Control of weeds on irrigation systems. 140 pages, illus. U. S. D. I., Bureau of Reclamation. Washington, D. C. 1949. 35¢ from Government Printing Office.
This bulletin tells in detail how to prevent the spread of weeds and how to control ditchbank weeds and waterweeds.

BEETLE, ALAN ACKERMAN. Scirpus. North American Flora 18(pt. 8): 481-504. October 29, 1947. $1.00.
Keys to and descriptions of 48 North American species of bulrushes.

CHEADLE, V. I. and PALMATIER, E. A. A preliminary study of a salt-water pond in Rhode Island and its educational implications. Proceedings of the 1948 Northeastern Game Conference. Pages 89-91. 1948.
Waterfowl food resources of Trustom Pond.

CRAFTS, ALDEN S. Control of aquatic and ditchbank weeds. 16 pages, illus. California Agricultural Extension Service, Circular 158. October 1949.
Emphasis is on chemical methods of control.

VEGETATION--AQUATIC--Continued

HITCHCOCK, A. E. and others. Water hyacinth: its growth, reproduction, and practical control by 2,4-D. Contributions from Boyce Thompson Institute 15(7): 363-401, illus. April-June 1949.

Field work dealing with the eradication of water hyacinth and alligator weed (Alternanthera) in Louisiana was started in April 1948. This report discusses killing water hyacinths, sinking the hyacinths, reinfestation by hyacinths, effects of 2,4-D on alligator weed, and greenhouse and laboratory experiments. "The 2,4-D spray treatments and methods of applying them to water hyacinths (Eichhornia crassipes Solms.) in Louisiana at all seasons of the year, proved substantially more effective and offer greater possibilities for the practical control of this serious pest than treatments or methods reported to date by other workers." "The isopropyl ester of 2,4,5-T proved effective, in preliminary tests, for killing and sinking alligator weed." Germination experiments showed that there were tremendous possibilities for the propagation of hyacinths by seed.

JACKSON, HERBERT W. Weed control in small ponds. 28 pages, illus. Virginia Agricultural Experiment Station, Bulletin 425. June 1949.

The author discusses proper construction of ponds, fertilization, hand weeding, grazing, and the use of chemicals.

MacNAMARA, L. G. Marsh management in New Jersey. Proceedings of the 1948 Northeastern Game Conference. Pages 92-93. 1948.

"Dike construction has been the major operation on the three salt marsh improvement projects that have been initiated."

WOOD, R. D. A review of the genus Nitella (Characeae) of North America. Farlowia 3(3): 331-398, illus. July 1948.

This is a compilation of published information on 36 species. It contains a key, descriptions, a review of the literature, and notes on North American distribution.

LANDS & SOILS

SCHOEWE, WALTER H. The geography of Kansas. Part II, Physical geography. Transactions of the Kansas Academy of Science 52(3): 261-333, illus. September 1949.

A clear account of Kansas physiography, well illustrated by photos and maps.

WATER

McLAIN, JOSEPH H. State of Maryland Water Pollution Control Commission, second annual report, 1948. 108 + xvi pages, illus. Water Pollution Control Commission, 2203 North Charles St., Baltimore. 1949

This report describes the Commission's facilities and its jurisdiction, the control program, progress in 403 municipalities and individual industries, and needs for future activity. Special activities of the year were studies of the Back River treatment works in Baltimore, oil pollution control, and a Potomac River survey.

MEINZER, OSCAR E., editor. Hydrology. 712 pages, illus. Dover Publications, Inc., New York. 1949. $4.95.

This is the ninth in a series of volumes on "Physics of the Earth." Its 15 chapters were written by 24 paople. They cover the subjects of precipitation, evaporation from free water surfaces, snow, glaciers, lakes, infiltration, transpiration, soil moisture, ground water, runoff, droughts, physical changes in the earth produced by water, and hydrology of limestone and lava-rock terranes.

SAULTS, DAN and others. The rivers of Missouri. 100 pages, illus. Missouri Conservation Commission, Jefferson City. 1949? 25¢.

Separate essays on 12 rivers tell of their forests, farmlands, and wildlife, and their use for travel, power, flood control, and drainage.

WOLF, BILL. Wildlife's share in clean water. Pennsylvania Game News 20(6): 11-13, illus. September 1949.

Pennsylvania's ducks, muskrats, beaver, coons, and mink cannot live without reasonably clean water. The State is cleaning up its badly polluted streams.

CLIMATE & WEATHER

WOLFE, JOHN N.; WAREHAM, RICHARD T.; SCOFIELD. HERBERT T. Microclimates and macroclimate of Neotoma, a small valley in central Ohio. Ohio Biological Survey, Bulletin 41(vol. 8, no. 1). 267 pages, illus. October 1949. $1.50.

A thorough study in which the authors describe the area's physiography, soils, and vegetation; the macroclimate; the seasons; weather of the years 1939-1944; microclimates; and phenology. Its purpose was to define the very varied local climatic conditions encountered by plants during their seedling stages. Some weather phenomena varied more in this mile-long valley than records showed them to vary in the entire state of Ohio. Extremes of soil conditions and major catastrophes are the only conditions that exert more influence on vegetation than does microclimate. Individual species have different microclimates according to their growth habits and growth season. The bulletin is well written and well illustrated and has a long bibliography.

AUTHOR INDEX

	Page
Adams, Lowell	18
Addy, C. E.	60
Ager, James H.	60
Alexander, W. B.	37
Allen, E. Ross	46
Allen, Robert Porter	37
Allred, B. W.	58
Ammann, G. A.	43
Amos, Bruce	38
Anderson, Alfred W.	18
Anderson, Chester C.	18
Anderson, Wallace L.	60
Anderwald, Frank R.	59
Arend, John L.	56
Ashbrook, Frank G.	23
Bailey, L. H.	55
Balcom, Robert B.	60
Barkalow, Frederick S., Jr.	14
Barry, Edwin M.	6
Barske, Philip	38
Bartlett, Ilo H.	19
Bassett, Charles F.	26
Bates, Marston	53
Baumann, Carl A.	39
Baumgartner, Luther L.	19
Beach, James E.	3
Beaulieu, P. O.	6
Beetle, Alan Ackerman	60
Behle, William H.	37
Bellrose, Frank C.	16
Bennett, Logan	31,40
Biester, H. E.	39
Bigelow, Henry B.	50
Bischoff, Arthur I.	20
Blair, W. Frank	16
Bloomquist, Wallace R.	39
Borror, Donald J.	32
Bradt, G. W.	9,27
Bramble, W. C.	19
Breland, Osmond P.	2
Brink, V. C.	18
Brockley, Harry J.	22
Broley, Charles L.	44
Brown, Clair A.	55
Brown, R. A., Jr.	6
Bryant, C. E.	38
Bulger, J. D.	4
Buntin, Howell	6
Byrd, Elon E.	32
Cagle, Fred R.	47
Camburn, F. Lawrence	20
Campbell, Howard	40
Carl, G. Clifford	50
Carpenter, Ralph G., 2nd	6
Cartwright, B. W.	35
Chamberlain, E. Burnham	34
Chapman, Floyd B.	40
Chapman, Isaac D.	7
Chase, Greenleaf T.	25
Cheadle, V. I.	60
Chu, H. F.	53
Clark, Robert Foster	47
Clay, John W.	7
Clemens, W. A.	50
Collins, Stephen	5
Connor, W. S.	7
Cook, C. Wayne	58
Cook, Clyde J.	58
Correll, Donovan S.	55
Cory, V. L.	56,59
Cottam, Clarence	36
Cowan, I. McT.	15,18,25
Crafts, Alden S.	60
Cram, Delbert	43
Crawford, Bill	7
Crichton, V.	23
Crissey, Walter F.	7,35
Critcher, Stuart	35
Curtis, Brian	51
Curtis, Lawrence	47
Dalrymple, Byron W.	43,44
Damon, David	40
Dargan, Lucas M.	47
Darrow, Robert W.	7
Dasmann, William P.	19
Davidson, Joe B.	8
DeBusk, Kelly E.	8
DeGarmo, W. R.	8
Denton, J. Fred	32
Dodgen, H. D.	8
Dorer, Richard J.	8
Duerr, William A.	57

	Page
East, Ben	36
Eastham, J. W.	55
Eddy, Samuel	51
Edminster, Frank C.	51,60
Edwards, Robert L.	25
Egler, Frank E.	54
Ellison, Lincoln	59
Engle, James W., Jr	20
English, P. F.	19
Etheredge, O. F.	20
Evans, Francis C.	29
Faber, Lester F.	8
Farfante, Isabel Perez	50
Ferrel, Carol M.	22
Fichter, Edson	21,26
Flick, Frances J.	2
Flury, Alvin G.	48
Foran, Arthur F.	5
Friddle, Saufley B.	50
Friley, Charles E., Jr	24
Gabrielson, Ira N.	8
Gardner, J. L.	59
Gehrken, George	40
Gensch, R. H.	25
George, Jean	26,27
George, John L.	26,27
Gertsch, Willis J.	54
Glazener, W. C.	20
Glendening, G. E.	29
Godfrey, W. Earl	32
Gordon, Mackenzie, Jr	53
Gordon, Robert E.	47
Graham, Edward H.	9
Grasse, James E.	24
Grater, Russell K.	17
Green, Hubert V.	22
Greenberg, David B.	39
Grey, John H., Jr	33
Griscom, Ludlow	33,36
Grizzell, Roy A., Jr	48
Guilday, John E.	27
Guilkey, Paul C.	57
Gustafson, A. F.	9
Gutermuth, C. R.	9
Hamerstrom, F. N., Jr	20
Hamilton, W. J., Jr	28
Hanna, G. D.	52
Hanson, Harold C.	36
Harris, Lorin E.	58
Hawley, Ralph C.	57
Hayes, Edward C., Jr	9
Hayne, Don W.	23,29
Headstrom, Richard	45
Hendricks, Bartlett	33
Hensley, M. Max	48
Herald, Earl S.	48
Herman, Carlton M.	20,39
Herre, Albert W. C. T.	48
Higgins, Ethel Bailey	55
Hill, Elmer L.	17
Hill, R. G.	9
Hitchcock, A. E.	61
Hoffmaster, P. J.	9
Hopkins, G. H. E.	16
Horn, Arthur G.	57
Hornkohl, Leon W.	43
Hosking, Eric J.	44
Howell, John Thomas	56
Hubbs, Carl L.	51
Hunter, Gilbert N.	15
Hunter, Russell P.	41
Ingle, Robert M.	52
Ingles, Lloyd G.	30
Interstate Deer Herd Committee	20
Isfort, Louise G.	2
Jackson, Herbert W.	61
Jameson, David L.	48
Jameson, E. W., Jr	31
Janson, Retuel	43
Johnson, Robert H.	60
Johnstone, Walter B.	33
Jones, Gardiner F.	42
Jones, J. Knox, Jr	44
Jones, Paul V., Jr	22
Jones, Richard O.	52
Jones, Robert L.	43
Jorgensen, Carl	10
Julander, Odell	56
Keck, David D.	54
King, Ralph T.	15
Klimstra, W. D.	40,48
Korstian, Clarence F.	58
Kozicky, Edward L.	15
Kramer, Richard	39

	Page
Lack, David	34
Lagler, Karl F	51
Langenbach, John R	10
Langlois, Marina Holmes	3
Langlois, Thomas Huxley	3
Larrabee, Lee	10
Lawrence, George E	37
Leach, Howard R	22
Leffler, Ross L	10
Lennox, Colin G	10
Leopold, Aldo	3
Liner, Ernest A	49
Llewellyn, Leonard M	26,29
Low, Jessop B	25
MacGinitie, G. E	52
MacGinitie, Nettie	52
MacMullan, R. A	42
MacNamara, L. G	61
Mann, Margery P	28
Manville, Richard H	28
Marston, Merwin A	4
Martin, Alexander C	5
Mason, C. Russell	45
McCabe, Robert A	27
McCormack, J. F	57
McCully, Wayne G	59
McDowell, Robert D	40
McKnight, Thomas J	24
McLain, Joseph H	62
McLaughlin, C. L	21
Meinzer, Oscar E	62
Mendall, Howard L	36
Miller, Clay E., Jr	16
Miller, Richard F	38
Mitchell, Glenn E	14
Moggridge, Jack	41
Mohler, Levi L	42
Mohr, Charles E	31
Morgan, Ben C	11
Morgan, H. R	11
Morlan, Harvey B	17
Morris, R. F	29
Munz, Philip A	54
Murray, T. B	11
Nagel, W. O	26
Neill, Wilfred T	46
Newberry, Cyril W	44
Norris, J. J	28
Norris, Kenneth S	49
Nyman, R. W	25
Odum, Eugene P	2
Ogden, Edith Bolan	56
Palmatier, E. A	60
Palmer, E. Laurence	53
Palmer, Ralph S	15,33
Parker, Malcolm V	49
Patterson, Robert L	43
Pebbles, Harold A	11
Pechanec, Joseph F	59
Penney, J. T	17
Peterson, Randolph L	49
Petrides, George A	27
Phillips, Allan	3
Phillips, Homer W	34
Poole, Earl L	34
Post, George	42
Potts, Merlin K	17
Powell, Stephen E	19
Price, W. Armstrong	30
Quinn, I. T	11
Rabor, D. S	48
Ramsey, L. W	49
Reed, Parker C	45
Reynolds, H. G	29
Richmond, Neil D	17
Rider, H. A	12
Robinson, J. L	16
Roedel, Phil M	52
Rollings, Clair T	16
Rosland, Harry R	17
Rouleau, Ernest	56
Sampson, F. W	26
Sandberg, Lynn	57
Sanderson, Glen C	29
Saults, Dan	62
Scheffer, Victor B	32
Schifferli, A	45
Schmeekle, F. J	4
Schmidt-Nielsen, Bodil	30
Schmidt-Nielsen, Knut	30
Schoewe, Walter H	61
Schroeder, William C	50
Schubert, Joseph H	17
Schultz, Vincent	41

	Page
Schuster, R. M.	56
Schwarte, L. H.	39
Schwartz, Charles W.	41
Schwartz, Elizabeth Reeder	41
Scofield, Herbert T.	62
Scott, Peter	36
Seagears, Clayt	23
Seamans, Roger	21
Self, J. Teague	24
Severaid, Joye Harold	31
Severinghaus, C. W.	21
Shapiro, Jacob	30
Sheldon, William G.	26
Shuman, Richard F.	22
Simon, James R.	52
Singleton, John R.	36
Skinner, Curtis K.	22
Skuncke, Folke	23
Slaybaugh, Nelson E.	12
Smith, Allyn G.	53
Smith, Charles F.	12
Smith, F. G. Walton	52
Smith, Malcolm	3
Smith, Norman F.	12
Smith, R. O.	53
Smith, Richard L.	47
Snead, I. Edwin	25
Snyder, Dana Paul	46
Spaulding, Edward S.	41
Spencer, Donald A.	4
Sprunt, Alexander, Jr.	34
Stanton, Frank	12
Stenlund, Milton H.	21
Stephansky, Bernard A.	24
Stevens, Charles E., Jr.	33
Stewart, George	59
Stewart, Robert E.	34
Stickel, Paul W.	57
Stickel, William H.	47
Stiles, Bruce F.	12
Storer, John H.	32
Storer, Tracy I.	28
Strong, A. M.	52
Surber, Thaddeus	51
Swift, Ernest	13
Swift, Lloyd W.	13
Switzenberg, D. F.	26
Tansley, A. G.	54
Tarzwell, Clarence M.	52
Taylor, I. T.	60
Tevis, Lloyd, Jr.	24
Thomas, Bert E.	13
Thompson, Donald R.	39
Thornton, Wilmot A.	34
Tolstead, W. L.	56
Toumey, James W.	58
Trimble, G. R., Jr.	58
Tripp, Norman R.	58
Trippensee, R. E.	43
Valgenti, Frank J., Jr.	13
Van Camp, John C., Jr.	5
Vaughn, Ernest A.	13
Vesall, D. B.	25
Wagner, Fred H.	41
Wahlenberg, W. G.	58
Walker, Eugene A.	44
Walkinshaw, Lawrence H.	38
Wallace, David H.	14
Wallace, George J.	45
Wallace, Lisle L.	14
Wampole, John H.	21
Wandell, Willet N.	46
Wareham, Richard T.	62
Washburn, Mel	31
Webb, William L.	15
Webber, A. J.	39
Wehrle, L. P.	3
Werler, John E.	49
Westerskov, Kaj	39
Wheeler, S. S.	5
Wight, Howard M.	42
Wilby, G. V.	50
Wilk, A. L.	32
Williams, George G.	46
Wilson, E. E.	14
Wilson, L. Wayne	50
Wolf, Bill	62
Wolfe, John N.	62
Wood, John Thornton	50
Wood, R. D.	61
Wood, Roy	21
Woolfolk, E. J.	59
Wright, Bruce S.	37
Wright, Thomas J.	26
Yeager, Lee E.	4
Yocom, Charles F.	37
York, Christopher L.	30,55
Young, Vernon	59
Zweifel, Richard G.	50

SERIALS ABSTRACTED IN THIS NUMBER

EL ALISO. Philip A. Munz, editor, R.F.D. 3, 23831 Esperanza Road, Anaheim, Calif. $5.00 a volume.

THE AMERICAN MIDLAND NATURALIST. University of Notre Dame, Notre Dame, Ind. $1.25 a copy.

ARIZONA WILDLIFE CONSERVATION. Arizona Game and Fish Commission, 104 State Bldg., Phoenix, Ariz.

ARKANSAS AGRICULTURAL EXPERIMENT STATION, BULLETINS. Arkansas Agricultural Experiment Station, Fayetteville, Ark.

AUDUBON FIELD NOTES. Audubon Field Notes, 1000 Fifth Ave., New York 28, N. Y. $2.00 a year, 50¢ for December issue.

AUDUBON MAGAZINE. Audubon Magazine, 1000 Fifth Ave., New York 28, N. Y. 45¢ a copy.

THE AUK. R. Allyn Moser, R.F.D. No. 1, Omaha 4, Nebr. $1.00 a copy.

THE BEAVER. The Beaver, Hudson's Bay House, Winnipeg, Manitoba. 25¢ a copy.

BIRD-BANDING. Charles B. Floyd, 210 South Street, Boston, Mass. $1.25 a copy.

BRITISH BIRDS. H. F. & G. Witherby, Ltd., 5 Warwick Court, London W. C. 1, England. 1 shilling and 9 pence a copy.

BRITISH COLUMBIA PROVINCIAL MUSEUM, DEPARTMENT OF EDUCATION, HANDBOOKS. British Columbia Provincial Museum, Victoria, British Columbia.

BRITISH COLUMBIA PROVINCIAL MUSEUM, SPECIAL PUBLICATIONS. British Columbia Provincial Museum, Victoria, British Columbia.

BULLETIN OF THE ILLINOIS NATURAL HISTORY SURVEY. Illinois Department of Registration and Education, Natural History Survey Division, Urbana, Ill.

BULLETIN OF THE MAINE AUDUBON SOCIETY. Mr. Burton Whitman, Jr., P. O. Box 155, Brunswick, Maine.

THE BULLETIN OF THE MASSACHUSETTS AUDUBON SOCIETY. Massachusetts Audubon Society, 155 Newbury Street, Boston 16, Mass. 25¢ a copy.

CALIFORNIA AGRICULTURAL EXTENSION SERVICE, CIRCULARS. Extension Service, College of Agriculture, University of California, Berkeley, Calif.

CALIFORNIA FISH AND GAME. Division of Fish and Game, University of California, Berkeley 4, Calif. Free.

CANADA DEPARTMENT OF MINES AND RESOURCES, DOMINION FOREST SERVICE BULLETINS. Canada Dept. of Mines and Resources, Dominion Forest Service, Ottawa, Canada.

THE CANADIAN ENTOMOLOGIST. The Canadian Entomologist, Professor R. H. Ozburn, Ontario Agricultural College, Guelph, Ontario. $4.00 a volume.

THE CANADIAN FIELD-NATURALIST. Dr. C. Frankton, Division of Botany, Central Experimental Farm, Ottawa, Canada. 60¢ a copy.

CASSINIA. Delaware Valley Ornithological Club, The Academy of Natural Sciences of Philadelphia, Nineteenth and The Parkway, Philadelphia 3, Pa. $1.50 a copy.

COLORADO GAME AND FISH DEPARTMENT, CURRENT REPORTS. Colorado Game and Fish Department, Denver, Colo.

THE CONDOR. Sidney B. Peyton, R.D. No. 2, Fillmore, Calif. $1.00 a copy.

THE CONSERVATION VOLUNTEER. Minnesota Department of Conservation, 633 State Office Bldg., St. Paul 1, Minn. Free.

CONTRIBUTIONS DE L'INSTITUT BOTANIQUE DE L'UNIVERSITÉ DE MONTRÉAL. Institut Botanique de l'Université de Montréal, 4101 est, rue Sherbrooke, Montréal 36, Canada.

CONTRIBUTIONS FROM BOYCE THOMPSON INSTITUTE. Boyce Thompson Institute for Plant Research, Inc., Yonkers 3, N. Y. Apply for price of reprints.

COPEIA. Edward C. Raney, Secretary, American Society of Ichthyologists & Herpetologists, Fernow Hall, Cornell University, Ithaca, N. Y. $1.50 a copy.

CORNELL RURAL SCHOOL LEAFLET. The New York State College of Agriculture, Ithaca, N. Y.

CRANBROOK INSTITUTE OF SCIENCE, BULLETINS. Cranbrook Institute of Science, Bloomfield Hills, Mich.

ECOLOGY. Miss Exie Duncan, Duke University Press, Box 6697, College Station, Durham, N. C. $2.00 a copy.

THE EMU. Royal Australasian Ornithologists Union. 386 Flinders Lane, Melbourne, Australia. 6 shillings a copy.

FARLOWIA. Farlowia, 20 Divinity Ave., Cambridge 38, Mass.

FIELD & LABORATORY. University Press in Dallas, Southern Methodist University, Dallas 5, Texas. $1.00 a year.

FISHERIES RESEARCH BOARD OF CANADA, BULLETINS. Fisheries Research Board of Canada, Ottawa, Canada.

THE FORESTRY CHRONICLE. The Canadian Society of Forest Engineers, 10 Manor Road West, Toronto, Ontario. $4.00 a year.

HERPETOLOGICA. Chapman Grant, 2970 Sixth Ave., San Diego 3, Calif. $3.00 a volume.

THE IBIS. Hon. Secretary, British Ornithologists' Union, c/o The Bird Room, British Museum (Natural History), Cromwell Road, London, S.W. 7, England. 17 shillings and sixpence a copy.

ILLINOIS NATURAL HISTORY SURVEY, BIOLOGICAL NOTES. Illinois Department of Registration and Education, Natural History Survey Division, Urbana, Ill.

ILLINOIS WILDLIFE. Illinois Wildlife, 508 W. Charles St., Champaign, Ill.

IOWA CONSERVATIONIST. Conservation Commission, 914 Grand Avenue, Des Moines, Iowa. $1.00 for 3 years.

IOWA STATE COLLEGE JOURNAL OF SCIENCE. The Iowa State College Press, Press Bldg., Ames, Iowa. $1.25 a copy.

JOURNAL OF FORESTRY. Journal of Forestry, 825 Mills Bldg., 17th Street and Pennsylvania Avenue, N. W., Washington 6, D. C. 60¢ a copy.

JOURNAL OF MAMMALOGY. Donald F. Hoffmeister, Museum of Natural History, University of Illinois, Urbana, Ill. $1.25 a copy.

THE JOURNAL OF PARASITOLOGY. R. M. Stabler, Treasurer, American Society of Parasitologists, Colorado College, Colorado Springs, Colo. $6.00 a volume.

JOURNAL OF RANGE MANAGEMENT. American Society of Range Management, Mt. Royal and Guilford Aves., Baltimore 2, Md. $1.50 a copy.

JOURNAL OF THE TENNESSEE ACADEMY OF SCIENCE. R. M. Rusk, Secretary, The Tennessee Academy of Science, Knoxville, Tenn. 50¢ a copy.

THE JOURNAL OF WILDLIFE MANAGEMENT. Shaler E. Aldous, Secretary, The Wildlife Society, U. S. Fish and Wildlife Service, Washington 25, D. C. $1.25 a copy.

LOUISIANA CONSERVATIONIST. Louisiana Department of Wild Life and Fisheries, 126 Civil Courts Bldg., New Orleans, La.

LOUISIANA FORESTRY COMMISSION, BULLETINS. State Forester, Louisiana Forestry Commission, Box 1269, Baton Rouge, La.

MICHIGAN AGRICULTURAL EXPERIMENT STATION, TECHNICAL BULLETINS. Michigan Agricultural Experiment Station, East Lansing, Mich.

MICHIGAN CONSERVATION. Michigan Department of Conservation, State Office Bldg., Lansing 13, Mich. 50¢ a year.

MICHIGAN STATE COLLEGE, EXTENSION SERVICE, EXTENSION BULLETINS. Michigan State College, Extension Service, East Lansing, Mich.

MISSOURI CONSERVATION COMMISSION, BULLETINS. Missouri Conservation Commission, Jefferson City, Mo.

MISSOURI CONSERVATION COMMISSION, CIRCULARS. Missouri Conservation Commission, Jefferson City, Mo.

THE MURRELET. Pacific Northwest Bird and Mammal Society, Washington State Museum, University of Washington, Seattle 5, Wash. 95¢ a copy.

MUSEUM OF ZOOLOGY, UNIVERSITY OF MICHIGAN, MISCELLANEOUS PUBLICATIONS. Director, Museum of Zoology, Ann Arbor, Mich.

NATIONAL MUSEUM OF CANADA, BULLETINS. Canada Department of Mines and Resources, Mines and Geology Branch, National Museum of Canada, Ottawa, Canada.

NATIONAL RESEARCH COUNCIL, INSECT CONTROL COMMITTEE REPORTS. National Research Council, Washington, D. C.

THE NATIONAL SPELEOLOGICAL SOCIETY, BULLETINS. The National Speleological Society, 510 Star Bldg., Washington, D. C.

THE NEBRASKA BIRD REVIEW. William F. Rapp, Jr., Dept. of Biology, Doane College, Crete, Nebr. $2.00 a year.

NEW MEXICO AGRICULTURAL EXPERIMENT STATION, BULLETINS. New Mexico Agricultural Experiment Station, State College, N. Mex.

NEW YORK STATE CONSERVATION DEPARTMENT, RESEARCH SERIES, DIVISION OF FISH AND GAME. Secretary, Conservation Department, Albany, N. Y.

THE NEW YORK STATE CONSERVATIONIST. The Conservationist, N. Y. S. Conservation Dept., Albany 7, N. Y. $1.00 a year.

NORTH AMERICAN FLORA. The New York Botanical Garden, New York 58, N. Y.

NORTH DAKOTA OUTDOORS. Editor, North Dakota Outdoors, State Game and Fish Department, Bismarck, N. Dak. 5¢ a copy.

OCCASIONAL PAPERS OF THE BRITISH COLUMBIA PROVINCIAL MUSEUM. British Columbia Provincial Museum, Victoria, British Columbia.

OHIO BIOLOGICAL SURVEY, BULLETINS. Prof. Herbert Osborn, B. & Z. Bldg., Ohio State University, Columbus 10, Ohio.

THE OHIO CONSERVATION BULLETIN. Editorial and Executive Offices, 1106 State Office Bldg., Columbus 15, Ohio. 10¢ a copy.

THE OHIO JOURNAL OF SCIENCE. Dr. Richard A. Popham, Botany and Zoology Bldg., Ohio State University, Columbus 10, Ohio. $1.00 a copy.

THE OHIO STATE UNIVERSITY, THE FRANZ THEODORE STONE LABORATORY, CONTRIBUTIONS. The Franz Theodore Stone Laboratory, Put-in-Bay, Ohio.

OREGON STATE GAME COMMISSION BULLETIN. Oregon State Game Commission, 1634 S. W. Alder St., P. O. Box 4136, Portland 8, Oregon. Free.

OUTDOOR LIFE. Popular Science Publishing Co., Inc., 353 Fourth Ave., New York 10, N. Y. 25¢ a copy.

OUTDOORSMAN. Outdoorsman Publishing Co., 814 No. Michigan Ave., Chicago 11, Ill. 25¢ a copy.

PACIFIC DISCOVERY. California Academy of Sciences, Golden Gate Park, San Francisco 18, Calif. 50¢ a copy.

PENNSYLVANIA GAME NEWS. Editorial Office, Pennsylvania Game Commission, Harrisburg, Pa. 10¢ a copy.

PHYTOLOGIA. H. A. Gleason, The New York Botanical Garden, Bronx Park, New York 58, N. Y. 75¢ for vol. 3, no. 1; 50¢ for vol. 3, no. 2.

PROCEEDINGS OF THE ARKANSAS ACADEMY OF SCIENCE. L. B. Ham, Secretary, Arkansas Academy of Science, University of Arkansas, Fayetteville, Ark. $1.00 a copy.

PROCEEDINGS OF THE CALIFORNIA ACADEMY OF SCIENCES. California Academy of Sciences, Golden Gate Park, San Francisco 18. Calif.

PROCEEDINGS OF THE 1948 NORTHEASTERN GAME CONFERENCE. Massachusetts Fish and Game Association, 20 Spruce St., Boston, Mass. $1.00 a copy.

PROCEEDINGS, SOCIETY OF AMERICAN FORESTERS' MEETINGS. Society of American Foresters, Mills Bldg., 17th St. and Pennsylvania Ave. NW., Washington 6, D. C. $3.00 a copy.

PROCEEDINGS OF THE ZOOLOGICAL SOCIETY OF LONDON. The Secretary, Zoological Society of London, Regent's Park, London, N. W. 8, England. 1 pound a part.

THE PROGRESSIVE FISH-CULTURIST. Editor, Progressive Fish-Culturist, Fish and Wildlife Service, Interior Bldg., Washington 25, D. C. Free.

PUBLIC HEALTH REPORTS. Superintendent of Documents, Government Printing Office, Washington 25, D. C. 10¢ a copy.

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTE OF HEALTH, REPORTS. Public Health Service, Washington 25, D. C.

THE RAVEN. J. J. Murray, Editor, The Raven, Lexington, Va.

READING PUBLIC MUSEUM AND ART GALLERY, BULLETINS. Reading Public Museum and Art Gallery, Reading, Pa.

RHODE ISLAND DEPARTMENT OF AGRICULTURE AND CONSERVATION, DIVISION OF FISH AND GAME, PAMPHLETS. Rhode Island Department of Agriculture and Conservation, Providence, R. I.

SAN DIEGO SOCIETY OF NATURAL HISTORY, OCCASIONAL PAPERS. San Diego Society of Natural History, Natural History Museum, Balboa Park, San Diego 1, Calif.

SCIENCE. Circulation Department, Science, 1515 Massachusetts Ave., N. W. Washington 5, D. C. 25¢ a copy.

SOIL CONSERVATION. Superintendent of Documents, Government Printing Office, Washington 25, D. C. 10¢ a copy.

SOUTH DAKOTA CONSERVATION DIGEST.. South Dakota Department of Game, Fish and Parks, Pierre, S. Dak.

SOUTHEASTERN FOREST EXPERIMENT STATION, FOREST SURVEY RELEASES. Southeastern Forest Experiment Station, Box 252, Asheville, N. C.

SOUTHERN FOREST EXPERIMENT STATION, FOREST SURVEY RELEASES. Southern Forest Experiment Station, Mid-City Station Box 7295, New Orleans 18, La.

SPORTS AFIELD. Sports Afield Publishing Co., 401 Second Ave. So., Minneapolis 1, Minn. 25¢ a copy.

STATE OF FLORIDA, BOARD OF CONSERVATION, EDUCATIONAL SERIES. Supervisor, State Board of Conservation , Tallahassee, Fla. Free.

SYLVA. Department of Lands and Forests of Ontario, Toronto, Ontario.

TEXAS AGRICULTURAL EXPERIMENT STATION, MISCELLANEOUS PUBLICATIONS. Texas Agricultural Experiment Station, College Station, Texas.

TEXAS GAME AND FISH. Texas Game and Fish, Walton Building, Austin, Texas. 10¢ a copy.

TEXAS GAME, FISH & OYSTER COMMISSION, F A REPORT SERIES. Texas Game, Fish & Oyster Commission, Austin, Texas.

THE TEXAS JOURNAL OF SCIENCE. Gladys H. Baird, Secretary-Treasurer, The Texas Academy of Science, Huntsville, Texas.

TRANSACTIONS OF THE KANSAS ACADEMY OF SCIENCE. Director, Library, University of Kansas, Lawrence, Kansas.

UNITED STATES DEPARTMENT OF AGRICULTURE, CIRCULARS. Superintendent of Documents, Government Printing Office, Washington 25, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE, LEAFLETS. Superintendent of Documents, Government Printing Office, Washington 25, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE LIBRARY, LIBRARY LISTS. United States Department of Agriculture Library, Washington 25, D. C.

UNITED STATES DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, SPECIAL SCIENTIFIC REPORTS. Fish and Wildlife Service, Washington 25, D. C. Limited distribution.

UNITED STATES DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE, WILDLIFE LEAFLETS. Fish and Wildlife Service, Washington 25, D. C. Free.

UNIVERSITY OF MAINE STUDIES, SECOND SERIES. University of Maine Library, Orono, Maine.

VIRGINIA AGRICULTURAL EXPERIMENT STATION, BULLETINS. Virginia Agricultural Experiment Station, Blacksburg, Va.

VIRGINIA WILDLIFE. Commission of Game and Inland Fisheries, 7 North Second St., P. O. Box 1642, Richmond 13, Va.

WILDLIFE MANAGEMENT NOTES. Nebraska Game, Forestation and Parks Commission, Lincoln, Nebr. Free

WILDLIFE IN NORTH CAROLINA. North Carolina Wildlife Resources Commission, Post Office Box 2919, Raleigh, N. C. 10¢ a copy.

WISCONSIN COOPERATIVE EDUCATIONAL PLANNING PROGRAM, BULLETINS. Wisconsin Cooperative Educational Planning Program, Room 147 N. State Capitol, Madison 2, Wis.

WRIGHTIA. University Press in Dallas, Southern Methodist University, Dallas 5, Texas. $5.00 a volume (50¢ for vol. 1, no. 5).

WYOMING GAME AND FISH DEPARTMENT, BULLETINS. Wyoming Game and Fish Department, Cheyenne, Wyoming.

WYOMING WILD LIFE. Wyoming Game and Fish Commission, Box 335, Cheyenne, Wyo. 50¢ a year.

THE ZOOLOGICAL RECORD. The Zoological Society of London, Regent's Park, London, England.

74831